

NAVY TRAINING SYSTEM PLAN
FOR
AVIATION LIFE SUPPORT SYSTEMS

N78-NTSP-A-50-9206A/D

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AVIATION LIFE SUPPORT SYSTEMS

EXECUTIVE SUMMARY

This Navy Training System Plan (NTSP) identifies manpower, personnel, and training requirements associated with Aviation Life Support Systems (ALSS). ALSS include specialized clothing and equipment designed to permit aircrew personnel to function within their flight environment, safely escape from a disabled aircraft, survive after escaping the aircraft, and facilitate Search and Rescue efforts. Several new systems are being added to the ALSS inventory, including the following:

- Navy Combat Edge Anti-Gravity Flight Ensemble
- CWU-79/P Passenger Anti-Exposure Survival Suit
- CWU-83/P Passenger Anti-Exposure Coverall Ensemble
- A/P22P-7(V) Quick Donning Flyer's Anti-Exposure Apparel Assembly CWU-60/P
- AN/URT-140 Radio Beacon Set
- AN/PRC-149 Radio Set
- Joint Advanced Laser Eye Protection Visor
- MBU-23(V)/P Enhanced Pressure-Demand Oxygen Mask
- FLU-8B/P Automatic Inflation Device
- LPU-32/P Life Preserver Assembly
- LPU-33/P, LPU-34/P, and LPU-36/P Low-Profile Floatation Collars
- A/P22P-21 Crew Backpack Assembly
- LRU-30/A, LRU-31/A, and LRU-32/A Multi-Place Life Rafts
- SRU-40/P Helicopter Aircrew Breathing Device
- Joint Helmet Mounted Cueing System (JHMCS)
- Joint Service Aircrew Mask
- Joint Protective Aircrew Ensemble
- Integrated Helmet Mounted Display and Sighting System

Navy Aircrew Survival Equipmentman (PR) personnel and Flight Equipment Marines with Military Occupational Specialty (MOS) 6048 perform maintenance of most ALSS at the organizational and intermediate levels. At the organizational level, Aviation Structural Mechanic (Safety Equipment) (AME) personnel and Marine Corps Aircraft Safety Equipment Mechanics with Navy Enlisted Classifications (NEC) or MOSs applicable to the specific aircraft perform maintenance on ejection seats and oxygen systems.

ALSS operator training is integrated into general and aircraft-specific aircrew training through the Naval Aviation Survival Training Program and Fleet Readiness Squadron Training, and has a separate NTSP documenting specific requirements. Maintenance training for PRs and Marines with MOS 6048 is currently established in class A1 courses. Maintenance training for

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AMEs and Marine Aircraft Safety Equipment Mechanics is provided through aircraft-specific Naval Aviation Maintenance Training Unit courses.

Since ALSS is a mature program, all manpower requirements are established. Changes resulting from JHMCS are defined in the JHMCS NTSP, N-78-A-50-0103/I. No other changes to existing manpower are projected.

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LIST OF ACRONYMS

ABO	Aviators Breathing Oxygen
ACC	Aircrew Systems Change
AEPS	Aircrew Escape Propulsion System
AIMD	Aircraft Intermediate Maintenance Department
ALSS	Aviation Life Support Systems
AME	Aviation Structural Mechanic (Safety Equipment)
AMTCS	Aviation Maintenance Training Continuum System
ANVIS	Aviators Night Vision Imaging System
ASTC	Aviation Survival Training Center
AT	Aviation Electronics Technician
BTN	Below-The-Neck
CAD	Cartridge Actuated Device
CBR	Chemical, Biological, and Radiological
CNATRA	Chief of Naval Training
CNO	Chief of Naval Operations
CO ₂	Carbon Dioxide
COMNAVAIRLANT	Commander Naval Air Force Atlantic Fleet
COMNAVAIRPAC	Commander Naval Air Force Pacific Fleet
COMNAVRESFOR	Commander Naval Reserve Force
CW	Continuous Wave
DME	Distance Measuring Equipment
DT	Developmental Test
EOD	Explosive Ordnance Disposal
FAA	Federal Aviation Administration
FAILSAFE	Fleet Air Introduction Liaison Survival Aircrew Flight Equipment
FMS	Foreign Military Sales
FRS	Fleet Readiness Squadron
FY	Fiscal Year
G	Gravity
GSA	Government Services Administration

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LIST OF ACRONYMS

+Gz	High Positive Acceleration
HABD	Helicopter Aircrew Breathing Device
HEED	Helicopter Emergency Egress Device
HF	High Frequency
IHMDS	Integrated Helmet Mounted Display and Sighting System
ILSP	Integrated Logistics Support Plan
IMRL	Individual Material Readiness List
IRAC	Interim Rapid Action Change
IOC	Initial Operational Capability
JALEPV	Joint Advanced Laser Eye Protection Visor
JHMCS	Joint Helmet Mounted Cueing System
JPACE	Joint Protective Aircrew Ensemble
JSAM	Joint Service Aircrew Mask
JSTRAP	Joint Systems Training Plan
LPFC	Low-Profile Floatation Collar
LSC	Lifesaving Systems Corporation
MATMEP	Maintenance Training Management and Evaluation Program
MCAS	Marine Corps Air Station
MCCDC	Marine Corps Force Structure
MOS	Military Occupational Specialty
MPLR	Multi-Place Life Raft
MRC	Maintenance Requirement Card
MSD	Material Support Date
MTIP	Maintenance Training Improvement Program
MTU	Maintenance Training Unit
NA	Not Applicable
NACES	Navy Aircrew Common Ejection Seat
NADEP	Naval Aviation Depot
NAF	Naval Air Facility
NAMP	Naval Aviation Maintenance Program
NAOS	Naval Aviation Oxygen Systems
NAS	Naval Air Station

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LIST OF ACRONYMS

NASTP	Naval Aviation Survival Training Program
NATEC	Naval Air Technical Data and Engineering Service Command
NATOPS	Naval Air Training and Operating Procedures Standardization
NATTC	Naval Air Technical Training Center
NAVICP	Naval Inventory Control Point
NAWCAD	Naval Air Warfare Center Aircraft Division
NAWCWD	Naval Air Warfare Center Weapons Division
NCE	Navy Combat Edge
NDI	Non-Developmental Item
NEC	Navy Enlisted Classification
NOMI	Naval Operational Medicine Institute
NTSP	Navy Training System Plan
NVIIS	Night Vision Image Intensifier Set
OBOGS	Onboard Oxygen Generating System
OMD	Operational Maintenance Department
OPNAV	Office of the Chief of Naval Operations
OPNAVINST	Office of the Chief of Naval Operations Instruction
OT	Operational Test
PAEC	Passenger Anti-Exposure Coverall
PAESS	Passenger Anti-Exposure Survival Suit
PBG	Pressure Breathing for G
PHSRU	Parachute Harness Sensing Release Unit
PM	Preventive Maintenance
PMA	Program Manager, Air
PR	Aircrew Survival Equipmentman
RFT	Ready For Training
SAR	Search And Rescue
SDLM	Standard Depot Level Maintenance
SEAWARS	Sea Water Activated Release System
SSP	Standard Soft Pack
TBD	To Be Determined
TPL	Thermoplastic Liner

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LIST OF ACRONYMS

TTE	Technical Training Equipment
TYCOM	Type Commander
UHF	Ultra High Frequency
ULSS	User's Logistics Support Summary
USAF	United States Air Force
VOD	Vertical Onboard Delivery
WC	Work Center

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PREFACE

The Aviation Life Support Systems (ALSS) Navy Training System Plan (NTSP) was first developed in August 1991. This Draft NTSP reflects the removal of Navy Enlisted Classification (NEC) 7356 equipment from previous iterations of this document, and complies with the guidelines set forth in the Navy Training Requirements Documentation Manual, OPNAV P-751-1-9-97. This update reflects the latest information on the ALSS program, and incorporates comments from Chief of Naval Operations Director of Naval Training (N75K); Marine Corps Force Structure (MCCDC) C53; Commander, Naval Air Force, U.S. Pacific Fleet (N422F0); Naval Air Systems Command (AIR 3.1.4); and Naval Aviation Maintenance Training Group Headquarters. Specific changes include:

- LPU-36/P Low-Profile Floatation Collars (LPFC) added to the ALSS inventory
- A/P22P-21 Crew Backpack Assembly added to the ALSS inventory
- CWU-83/P Anti-Exposure Coverall Ensemble added to the ALSS inventory
- Updated points of contact

Additionally, all references to Naval Oxygen Systems equipment, components, regulators, billets, and training tracks associated with NEC 7356, were removed from this NTSP and incorporated into the Naval Aviation Oxygen Systems (NAOS) NTSP, N-78-A-50-8603C/D. Oxygen Masks and Navy Combat Edge (NCE) equipment were retained in this document since this equipment is not directly associated with NEC 7356.

PART I - TECHNICAL PROGRAM DATA

A. NOMENCLATURE-TITLE-PROGRAM

1. Nomenclature-Title-Acronym. Aviation Life Support Systems (ALSS)

2. Program Elements

a. Research, Development, Test, and Evaluation ... 0604264NBA5

b. Operation and Maintenance..... 0702207NBA1

c. Other Procurements..... 070801NBA3

B. SECURITY CLASSIFICATION

1. System Characteristics..... Unclassified

2. Capabilities..... Unclassified

3. Functions..... Unclassified

C. MANPOWER, PERSONNEL, AND TRAINING PRINCIPALS

OPNAV Principal Official (OPO) Program Sponsor CNO (N780G4)

OPO Resource Sponsor..... CNO (N780G4)

Marine Corps Program Sponsor..... CMC (ASL-33)

Developing Agency..... NAVAIRSYSCOM (PMA202)

Training Agency CINCLANTFLT
CINCPACFLT
CNET
NOMI

Training Support Agency NAVAIRSYSCOM (PMA205)

Manpower and Personnel Mission Sponsor CNO (N12)
NAVPERSCOM (PERS-4, PERS-404)

Director of Naval Training..... CNO (N795)

Commander, Reserve Program Manager.....COMNAVAIRESFOR (N-711)

D. SYSTEM DESCRIPTION

1. Operational Uses. ALSS are composed of specialized clothing and equipment designed to permit aircrew personnel (i.e., Pilots, Naval Flight Officers, and Enlisted Aircrewmembers) and passengers of naval aircraft to function within their flight environment, safely escape from a disabled aircraft, survive after escaping the aircraft, and assist with the rescue effort. Various combinations of ALSS are employed on every Navy and Marine Corps aircraft, depending on the aircraft type, mission, and flight environment.

The NCE aircrew protective assembly is a system of specialized garments and equipment that provide an interface between the Pilot and the aircraft. The NCE has been designed to significantly reduce the adverse effects of excessive, sustained, and rapid onset High Positive Acceleration (+Gz) forces. Other new systems include:

- CWU-79/P Passenger Anti-Exposure Survival Suit (PAESS)
- CWU-83/P Passenger Anti-Exposure Coverall (PAEC) Ensemble
- A/P22P-7(V) Quick Donning Flyer's Anti-Exposure Apparel Assembly CWU-60/P
- AN/URT-140 Radio Beacon Set
- AN/PRC-149 Radio Set
- MBU-23(V)/P Enhanced Pressure-Demand Oxygen Mask
- FLU-8B/P Automatic Inflation Device
- LPU-32/P Life Preserver Assembly
- LPU-33/P LPFC
- LPU-34/P LPFC
- LPU-36/P LPFC
- A/P22P-21 Crew Backpack Assembly
- LRU-30/A Multi-Place Life Raft (MPLR)
- LRU-31/A MPLR
- LRU-32/A MPLR
- SRU-40/P Helicopter Aircrew Breathing Device (HABD)
- Joint Advanced Laser Eye Protection Visor (JALEPV)
- Joint Helmet Mounted Cueing System (JHMCS)
- Joint Service Aircrew Mask (JSAM)
- Joint Protective Aircrew Ensemble (JPACE)
- Integrated Helmet Mounted Display and Sighting System (IHMDSS)

2. Foreign Military Sales. Information concerning Foreign Military Sales (FMS) and other procurements may be obtained by contacting the Aircrew Systems, Program Manager, Air (PMA) 202.

E. DEVELOPMENTAL TEST AND OPERATIONAL TEST

1. Navy Combat Edge. Developmental Test (DT)-IIB for the NCE was conducted from June 1994 to April 1995 at Naval Air Warfare Center Aircraft Division (NAWCAD) Patuxent River, Maryland. DT-IIC was conducted at NAWCAD Patuxent River in June 1995 and was completed in August 1995. NAWCAD conducted operation and maintenance training for DT and pre-Operational Test (OT) prior to NCE testing. NCE OT-1A, OT-1B, and OT-1C were completed at the following locations:

- Naval Air Station (NAS) Oceana, Virginia Beach, Virginia
- NAS Lemoore, California
- Marine Corps Air Station (MCAS) Beaufort, South Carolina
- MCAS Miramar, San Diego, California

OT-IIA was conducted from July through August 1995 at NAWCAD Patuxent River. OT-IIB, conducted by Air Test and Evaluation Squadron, VX-9, began in October 1995 and was completed in February 1996. Operational Evaluation personnel received operation and maintenance training from NAWCAD personnel.

2. Joint Helmet Mounted Cueing System. Refer to the JHMCS NTSP as listed in paragraph M. of this NTSP for information concerning this program.

3. Joint Protective Aircrew Ensemble. Refer to the JPACE Joint Systems Training Plan (JSTRAP) listed in paragraph M. of this NTSP for information concerning this program.

4. Joint Service Aircrew Mask. Refer to the JSAM JSTRAP listed in paragraph M. of this NTSP for information concerning this program.

F. AIRCRAFT AND/OR EQUIPMENT/SYSTEM/SUBSYSTEM REPLACED. Various Anti-Gravity (G) systems, including Anti-G garments and hardware currently used by aircrew personnel in high-performance fighter-attack aircraft, will be replaced by the NCE.

NEW	REPLACED
CWU-83/P PAEC Ensemble	CWU-79/P PAESS
CRU-103/P G-Compensated Oxygen Regulator (part of the NCE system)	CRU-79/P, CRU-82/P, and CRU-88/P
AN/URT-140 Radio Beacon Set	AN/URT-33A and AN/PRT-5
AN/PRC-149 Radio Set	AN/PRC-90-2, AN/PRC-112, and AN/PRC-125
LPU-32/P Life Preserver Assembly	LPP-1/-1A and LPU-30/P
LPU-33/P LPFC	LPU-23/P Series

NEW	REPLACED
LPU-34/P LPFC	LPU-21/P Series
LPU-36/P LPFC	LPU-33/P Series
FLU-8B/P Automatic Inflation Device	FLU-8A/P
A/P22P-21 Crew Backpack Assembly	NB-8 Backpack Assembly
LRU-30/A MPLR	LRU-12/A and LRU-13/A
LRU-31/A MPLR	LRU-14(A)/A
LRU-32/A MPLR	LRU-15/A
CSU-13B/P Anti-G Garment	CSU-15/P
MBU-23(V)/P Enhanced Pressure-Demand Oxygen Mask	MBU-5/P

G. DESCRIPTION OF NEW DEVELOPMENT

1. Functional Description. For the purpose of this NTSP, ALSS clothing and equipment have been divided into functional groups and are described below. All ALSS garments and protective devices are available in a variety of sizes to ensure a proper fit.

a. A/P22P-16 Navy Combat Edge. The NCE is an integrated aircrew flight ensemble designed to increase protection from the physiological hazards associated with +Gz forces. During exposure to +Gz forces, blood pooling in the lower portions of the body deprives the brain of an adequate supply of oxygenated blood and causes a loss of vision followed by a loss of consciousness. The NCE provides a Pressure Breathing for G (PBG) system for protection against the effects of positive acceleration (+4 to +9G) at altitudes up to 50,000 feet. The basic NCE concept is an adaptation of an advanced technology system developed by the United States Air Force (USAF), modified with Navy unique features compatible with current life support, survival, and rescue equipment. The anti-G valve system installed in the aircraft senses the onset of positive G-forces and automatically provides pressurized air to the anti-G garment and oxygen regulator. Regulated oxygen is then supplied to the NCE assembly equipment to provide for vest and helmet bladder inflation and positive pressure breathing. The NCE components described below will be integrated with other protective features of current ALSS equipment to achieve the full combat potential of the weapon system. The NCE is currently programmed for use only in the F/A-18 Aircraft.

(1) HGU-87/P22P-16 Aircrew Protective Helmet Assembly. The HGU-87/P22P-16 is a modified HGU-68/P Tactical Aircraft Helmet upgraded with a helmet bladder assembly. The assembly includes an inflatable occipital bladder that connects to the oxygen mask breathing hose. The occipital bladder automatically inflates with the onset of positive G-

forces to a pressure equal to the mask pressure, thereby tightening the mask to the face to prevent leakage.

(2) HGU-89/P22P-16 Aircrew Protective Helmet Assembly. The HGU-89/P22P-16 is a modified HGU-85(V)/P. This modification incorporates the same bladder assembly as the HGU-87/P22P-16 Helmet, and also provides for the use of MXU-810/U Night Vision System. It can be modified to accommodate the AN/AVS-9 Night Vision Image Intensifier Set (NVIIS).

(3) MBU-24/P22P-16 Oxygen Mask. The NCE uses the MBU-24/P22P-16 Oxygen Mask, which is designed to provide gaseous oxygen for breathing and inflation of the occipital bladder while maintaining face seal integrity under positive pressure breathing conditions. The mask assembly incorporates a separate inhalation and exhalation valve design that requires the breathing hose to be offset from the center of the mask. A compensation tube interconnects the inhalation and exhalation valves and directs a portion of the inhalation pressure to the underside of the exhalation valve plate, keeping the exhalation valve shut during inhalation. In addition to the inhalation and exhalation valves, the mask assembly consists of a silicone facepiece and associated hardshell, microphone and amplifier, hoses, retention straps, and offset bayonet connectors that attach the MBU-24/P22P-16 to the HGU-87/P22P-16 Helmet Assembly. A bladder supply hose connects the mask assembly to the occipital bladder installed inside the HGU-87(V)/P22P-16 Helmet.

(4) CSU-21/P22P-16 Counter-Pressure Vest. The CSU-21/P22P-16 Counter-Pressure Vest connects with the chest-mounted CRU-103/P G-Compensated Oxygen Breathing Regulator. The vest's primary function is to externally balance the internal chest cavity pressure associated with Assisted Positive Pressure Breathing and PBG. External counter pressure is necessary to reduce the risk of lung damage and to aid in exhalation. The CRU-103/P supplies regulated oxygen at a predetermined schedule to inflate the vest under +Gz force conditions. A flame resistant cloth outer shell houses a pneumatic bladder and incorporates a front slide fastener closure to provide easy donning and doffing, and laces to allow sufficient adjustment for correct fit. The vest fill-dump valve maintains the pressure differential between the vest and the mask at less than four inches of water at inspiratory pause.

(5) CRU-103/P G-Compensated Oxygen Breathing Regulator. The CRU-103/P is an automatic, positive pressure breathing type regulator that provides on-demand Aviator's Breathing Oxygen (ABO) to the aircrew via the MBU-24/P22P-16 Oxygen Mask. Designed to interface with either the Onboard Oxygen Generating System (OBOGS) or Liquid Oxygen systems, the CRU-103/P will replace the CRU-79/P, CRU-82/P, and CRU-88/P Miniature Oxygen Regulators through attrition, and is compatible with the MBU-12/P Series and MBU-23/P22P-16 Oxygen Masks. More information on this regulator can be found in the NAOS NTSP listed in paragraph M.

(6) CSU-20/P22P-16 Cutaway Anti-G Garment. The CSU-20/P22P-16 Cutaway Anti-G Garment is used to pressurize the lower torso area. The CSU-20/P22P-16 is similar to the CSU-13B/P Anti-G Suit, except that it provides a 40 percent increase in leg and

abdomen bladder coverage to further aid in preventing blood pooling in the legs. It has a flame resistant cloth outer shell which houses a bladder, is cut away at the groin and knees, and has waist and inner-leg slide fasteners, adjustment lacing with covers, and leg pockets with slide fastener closures. The lower garment bladder inflates automatically to a pressure determined by the automatic anti-G suit pressure regulating valve installed aboard the aircraft. A G-sensing line located between the anti-G garment hose quick connect and the G-compensated oxygen-breathing regulator provides the pneumatic signal to the regulator that enables the NCE system to operate. The regulator responds to the signal and delivers the appropriate output pressures for aircraft applied Gs. The bladder, when inflated, restricts the downward flow of blood to the waist and feet, thereby lessening the effect of blood pooling.

(7) TTU-551/E Leakage Tester. The TTU-551/E Leakage Tester is a self-contained portable unit for performing operational leak tests of the HGU-87/P22P-16 and HGU-89/P22P-16 Helmet Assemblies, and the CSU-21/P22P-16 Counter Pressure Vest. Regulated low-pressure oxygen is used by the Leakage Tester to evaluate the operational integrity of these devices.

b. CSU-15/P and CSU-13B/P Anti-G Garments. Anti-G Garments are designed to provide protection against the high G-forces experienced in high-performance aircraft. An Anti-G garment consists of a fire-resistant cloth outer shell that houses a bladder. As G-forces increase, the bladder inflates to pressures that are predetermined in an automatic valving system installed in the aircraft. The inflated bladder restricts the flow of blood downward to the Aircrewman's waist and feet, thereby lessening the effects of blackout. Anti-G garments are used by Aircrew personnel operating EA-6B, F/A-18, AV-8B, F-14, T-2, TA-4, T-38, T-45, and F-5 aircraft. CSU-13B/P Garments are replacing the CSU-15/P Garments through attrition.

c. Anti-Exposure Clothing. Anti-Exposure Clothing is designed to protect aircrew personnel and passengers from exposure to cold weather and/or water conditions in the event of immersion. Anti-Exposure Clothing is used by the Aircrew personnel of all Navy and Marine Corps aircraft operating in geographic areas that pose a potential threat of exposure.

(1) A/P22P-6 Series Constant Wear Anti-Exposure Assembly. The typical A/P22P-6 Series Constant Wear Anti-Exposure Assembly consists of a waterproof CWU-62/P Series outer garment with permanently attached waterproof socks worn over a one-piece liner and cold weather undergarments to provide thermal protection. A CWU-27/P Flyer's Coverall is worn over the assembly with an inflatable hood and mittens stowed in the pockets.

The A/P22P-6D(V)2 is a new version of the A/P22P-6C(V)2 Anti-Exposure Apparel Assembly, making available sizes and designs for female aviators. This system includes a resized and redesigned Anti-Exposure Coverall (CWU-62C/P), which replaces the CWU-62B/P for women. The A/P22P-6D(V)2 incorporates a new liner with a separate top (CWU-81/P) and bottom (CWU-82/P), which replaces the CWU-72/P liner for women. It also adds 36 additional sizes of the CWU-27/P Flight Suit with extended zippers for women. The

new liner and coveralls come in more sizes to provide a better fit for females and a broader range of males.

(2) CWU-79/P Passenger Anti-Exposure Survival System. The CWU-79/P PAESS, which includes the A/P22P-17 Anti-Exposure Apparel Assembly, is designed to provide cold weather and/or water protection for non-combat equipped passengers. The ensemble will be used for all passengers on Carrier Onboard Delivery and Vertical Onboard Delivery (VOD) aircraft on flights over water or where cold climatic conditions could be hazardous or fatal should emergency egress be necessary. The suit is a modified size-12 CWU-62A/P Anti-Exposure Coverall. The CWU-79/P has an attached HGU-32/P Hood and there are adjustment straps that enable the coverall to fit passengers of various sizes. HAU-12/P Anti-Exposure Mittens are included in a stowage pocket on the right thigh and CWU-75 Anti-Exposure Socks are attached as an integral part of the assembly.

(3) CWU-83/P Passenger Anti-Exposure Coverall Ensemble. The CWU-83/P PAEC Ensemble is comprised of the CWU-83/P PAEC, neoprene gloves, neoprene hood, and is worn with the LPU-32/P or LPP-1A Life Preserver Unit and HGU-24/P Cranial. It was designed to meet requirements for anti-exposure protection for non-troop, non-aircrew personnel on VOD missions when anti-exposure protection is required for the Aircrew. The suit is a commercial coverall composed of a Nylon/Goretex™ laminate that prevents water from leaking in, but allows sweat vapor to evaporate and alleviate heat stress and moisture buildup. The CWU-83/P has a neoprene hood stowed in the right thigh pocket, and neoprene five-finger gloves stowed in each of the forearm pockets. The hood and each glove are secured to the suit with a snap-off ribbon lanyard. Two sizes of coverall are available to passengers, and have color-coded labels on the chest area. The small size coverall has contrasting yellow trim; the large size has no contrasting color trim. Neoprene wrist and neck seals stretch to fit each the small and large size range. To expel trapped air in the suit, the suit is equipped with a self-burping exhaust valve on each shoulder, and air-blocking zip panels (gaiters) on each calf. To assist with Search And Rescue (SAR), a lifejacket retention loop is installed on the center front, and a grab panel is installed across the center upper back. When worn over regular winter uniforms or winter civilian clothing, the CWU-83/P can provide one-hour protection from hypothermia in 40° Fahrenheit seas. The CWU-83/P PAEC will replace the CWU-79/P PAESS through attrition.

(4) A/P22P-7(V) Quick Donning Flyers Anti-Exposure Apparel Assembly CWU-60/P. The A/P22P-7(V) Quick Donning Flyers Anti-Exposure Apparel Assembly is an emergency use assembly designed to keep the wearer warm and dry. The complete assembly provides protection from the thermal effects of cold water immersion in the event of emergency over water aircraft egress. The assembly consists of underclothing, the CWU-45/P Cold Weather Flyer's Jacket, CWU-18/P Cold Weather Trousers, CWU-60/P Quick Donning Anti-Exposure Coverall, CMU-21/P22P-7(V) modified Survival Vest, LPU-27/P22P-7(V) Life Preserver, HGU-32/P Anti-Exposure Hood, and HGU-47(V)4/P or (V)2/P Helmet. The jacket and trousers provide thermal insulation for winter flights over land and water and can be worn under the CWU-60/P Coverall in an emergency.

d. Aviators' Clothing. Aviators' clothing is designed for wear by Aircrew personnel as outer garments during flight operations in any military aircraft. Aviators' clothing consists of safety boots, coveralls, gloves, jackets, cold weather trousers, and HGU-4/P Sunglasses. Aircrew safety boots are high-top style with steel toes and are made of leather with fuel-resistant soles. Coveralls and gloves are made of fire-resistant Nomex material. The jacket is available in leather or nylon. Cold weather trousers are constructed of insulated nylon. Aviators' clothing is manufactured in different weights to ensure adequate protection for a wide range of temperatures and weather conditions.

e. Breathing Masks

(1) Quick Donning Oxygen and Smoke Masks. The MBU-10/P Quick Donning Oxygen Mask and two models of Full Face Oxygen and Smoke Masks are designed to dispense gaseous oxygen from a demand type regulator, and provide protection from smoke, carbon monoxide, and other incapacitating gasses. These masks are employed by aircrew personnel aboard C-130, E-6A, and P-3C aircraft.

The MBU-10/P consists of a suspension assembly and an oxygen mask assembly. The hanging suspension holder is mounted in the aircraft to facilitate stowage, a suspension assembly that incorporates a bracket assembly, cushions, straps, retention assemblies, and yoke assembly. The oxygen mask assembly is of a hard shell and molded rubber construction that incorporates the microphone, valve assembly, cord and snap assembly, connector, combination inhalation-exhalation valve, hose, cable guides and clamps, and a cable and plug assembly.

The full face oxygen and smoke masks consist of a molded rubber faceplate with microphone cavity, plastic lens, inhalation valves, exhalation valve, molded rubber headstrap assembly, and a delivery hose with communications leads. The delivery hose for the MIL-M-19417B type mask is covered with knitted tubular polyamide and the communication cable is molded into the hose with leads extending for attachment for the mask-mounted microphone. The delivery hose for the part number 651-469 type mask is made of flexible black silicon and has an external communications lead coiled around it following the convolutions of the hose. Both masks utilize the MC-3A Connector to connect with the aircraft's oxygen system, and may be worn with earphones or with a protective helmet.

(2) MBU-12/P Pressure-Demand Oxygen Mask. The MBU-12/P Pressure-Demand Oxygen Mask is designed to be worn over the face forming a seal on the cheeks, over the bridge of the nose, and under the chin. The mask is designed for use with a regulator that provides ABO upon demand at a pressure schedule dependent on the altitude. The mask may also be used with continuous flow bailout or walk-around oxygen sources. The mask provides facial protection from projectiles and fire as well as being qualified for depths up to 16-feet under water, and permits utilization of the valsalva maneuver to equalize pressure in the middle ear during descent.

The basic MBU-12/P subassembly is a lightweight, low profile, pressure-demand type oxygen mask. The mask features an integral pliable silicone face piece and polysulphonate hard shell. The mask also has a combination inhalation-exhalation valve and a flexible silicone hose. The typical mask assembly contains offset bayonets for attaching the mask to the helmet, a connector used to attach the mask to the regulator or walk around units or a regulator used to control the flow of oxygen to the mask, the appropriate communications cables to connect the mask to the aircraft intercommunications system, and a microphone and amplifier. Adding or removing major components to and from the basic MBU-12/P Oxygen Mask subassembly configures six variations of the mask to obtain the desired configuration, which depends on the aircrew communication equipment and oxygen requirements in specific types of aircraft. Aircraft applications include the F-14, F-16, F/A-18 (without NCE installed), AV-8B, S-3, EA-6B, E-2C, C-2A, KC-130, T-2, TA-4, T-34, and T-45; and the MBU-12/P is also being evaluated for use in the MV-22.

(3) MBU-23(V)/P Enhanced Pressure-Demand Oxygen Mask. The MBU-23(V)/P Series Enhanced Pressure-Demand Oxygen Mask is a low profile pressure demand oxygen mask developed for Non-Positive PBG applications in aircraft not equipped with the NCE system. The mask was designed as an alternative solution for personnel having problems wearing the MBU-12/P Oxygen Mask and as a replacement for the MBU-5/P Oxygen Mask. The basic mask configuration is nearly identical to the NCE MBU-24(V)P22P-16 Oxygen Mask except that it does not include a bladder supply hose to connect the mask assembly to the NCE helmet occipital bladder. Individual configurations of the MBU-23(V)/P Series were designed to meet Aircrew communication equipment and oxygen requirements in specific types of aircraft. Aircraft applications include the F-14, F-16, F/A-18 (without NCE installed), AV-8B, S-3, EA-6B, E-2C, C-2A, T-2, TA-4, T-34, and T-45.

f. A/P22P-9() (V) Helicopter Aircrew Chemical Biological Radiological Protective Clothing

(1) Chemical Biological Radiological Protective Clothing. Chemical Biological Radiological (CBR) Protective Clothing provides protection against chemical and biological warfare agents. It includes the A/P23P-14A(V) CBR Respirator Assembly (Helo-Upgrade), which is composed of the MCK-3A/P Mask with nose occluder, the Lower Assembly including a pusher fan, and the A/P375-1 Intercom Set. The Helo-Upgrade is the currently deployed and issued configuration for the Helicopter community, and is being evaluated for use in the MV-22. A new and improved Respirator Assembly, referred to as CBR Non-Developmental Item (NDI), is the A/P22P-14(V) Respirator Assembly, and it comes in four variants, five sizes for each variant. The CBR-NDI Respirator Assembly is Navy unique. The clothing ensemble provides Aircrew personnel with a blown filtered air supply.

(2) Chemical Biological Radiological Protective Masks. The MCK-3/P and MCK-3A/P CBR Protective Masks are designed to provide helicopter Aircrew with head, eye, and respiratory protection against the toxic and lethal effects of chemical or biological agents and radioactive fallout. The assembly provides above-the-neck protection during in-flight and ground operations and fits beneath standard issue helmets and protective equipment with

minimum interference. The mask is designed for wear in conjunction with Below-the-Neck (BTN) protective clothing. The Special Missions Manual, NAVAIR 13-1-6.10, describes in detail the required CBR clothing and equipment for each type of special mission.

The major components of a typical MCK-3()/P Series Protective Mask are the hood and faceplate. The hood, made of impervious bromo-butyl rubber, covers the entire head and extends down past the neck. A molded, one-piece polycarbonate faceplate is sealed into the front of the hood. The upper part is transparent and forms the optical area. The lower part is shaped to fit the wearer's lower face. Included on the faceplate is a nose occluder, toggle harness, anti-drown connector, drinking tube, microphone assembly, and valves and adapters required to connect the mask to portable oxygen, ventilators, or aircraft as required.

(3) Joint Service Aircrew Mask. For information concerning this program please refer to the JSTRAP for this equipment.

(4) Below-The-Neck Protective Clothing. The BTN portion of the A/P22P-9() (V) Protective Assemblies provide chemical and biological agent protection for helicopter Aircrew personnel. The components that comprise the BTN protective ensemble are chemical liner, cotton undergarments, chemical protective socks, disposable footwear covers, aircrew cape, chemical protective gloves, and chemical glove inserts.

The one-piece chemical liner is made of a nylon viscous non-woven fabric. The fabric's outer surface is treated with a fluorochemical liquid repellent finish, which repels liquid agents. The fabric's inner surface is coated with activated charcoal, which absorbs chemical vapors. The cotton undershirt and drawers are worn under the chemical liner to prevent skin irritation from the charcoal lining and to minimize the amount of perspiration contamination to the chemical liner. The chemical protective socks are made of four-millimeter polyethylene. They are vapor agent impermeable to protect the feet from chemical agents. The footwear covers are worn over the flyer's boots to protect Aircrew personnel from contamination en route between the shelter and the aircraft. The footwear covers must be removed before entering the aircraft. The aircrew cape is a large clear disposable plastic bag worn over the body. The cape protects the user from liquid contamination en route to the aircraft and must be removed before entering the aircraft. The chemical protective gloves are made of butyl to protect the hands from chemical agents. Chemical glove inserts are made of 100% cotton knit and must be worn under the chemical protective gloves to absorb perspiration.

g. Ejection Seats. The five primary models of ejection seats installed in Navy and Marine Corps aircraft are the Douglas ESCAPAC Model Series, North American LS-1, the Martin-Baker MK-GRU-7 Series, SJU-4/5/6 Series, and the SJU-17(V) Naval Air Crew Common Ejection Seat (NACES). Although considered a part of ALSS, ejection seats are beyond the scope of this NTSP. Specific information regarding ejection seats and associated training tracks for Aviation Structural Mechanic, Safety Equipment (AME) personnel may be found in the individual aircraft NTSPs as referenced in paragraph M. of this document. Refer to NTSP A-50-8517C/D for additional information regarding the NACES program. Aircraft application by type is listed in the following table:

EJECTION SEAT MODEL	AIRCRAFT APPLICATION
ESCAPAC Series	S-3; TA-4J
LS-1	T-2
MK-GRU-7A	F-14A/B
MK-GRUEA-7	EA-6B
SJU-4A	AV-8B
SJU-5A	F/A-18B (back), F/A-18A/C
SJU-6A	F/A-18B (front)
SJU-17(V) NACES	F-14D; T-45A, F/A-18C/D/E/F

h. Emergency Radios

(1) AN/URT-140 Radio Beacon Set. The AN/URT-140 is a compact, non-combat, emergency location beacon utilizing an advanced multi-moded waveform for improved SAR position location. It is capable of both manual and automatic activation, and timed and continuous operation while transmitting on the standard waveform that increases detection and location by ground and airborne SAR teams. It will replace the AN/URT-33A and AN/PRT-5 through attrition.

(2) AN/URT-33A Radio Beacon Set. The AN/URT-33A is a battery-powered emergency radio beacon transmitter that, when activated, transmits a tone-modulated radio frequency signal from a downed Aircrew member to the rescue party. The hand-held AN/URT-33A is housed in a watertight case. It has both a flexible and a telescoping antenna. Either an automatic deployment device or a manual on-off switch can activate the set. The AN/URT-33A is employed in Seat Survival Kits for ejection seat use, and in multi-place life rafts for non-ejection seat use.

(3) AN/PRT-5 Radio Transmitting Ultra High Frequency Set. The AN/PRT-5 is an emergency radio transmitter that transmits a tone-modulated radio frequency signal in both the High Frequency (HF) and Ultra High Frequency (UHF) ranges. The set has an inflatable float assembly that allows it to float at sea or sit upright on land. The battery pack is designed to provide 72-hours of continuous operation. The AN/PRT-5 is battery-powered and contains a UHF antenna, HF antenna, power switch, and float assembly that is inflated by a Carbon Dioxide (CO₂) cartridge or mouth valve. The top section of the transmitter set contains the electronics package and the lower part is the battery case. The AN/PRT-5 is employed in large multi-place life rafts only.

(4) AN/PRC-149 Radio Set. The AN/PRC-149 is a compact, light-weight, handheld, half-duplex, non-combat personal emergency communication radio and emergency location beacon transmitter that includes an advanced triple frequency multi-moded

waveform for improved beacon position determination by SAR forces. For training purposes, the AN/PRC-149 will be available in a training configuration that will be used as a single frequency (245.0 MHz) beacon and voice transmitter. In addition, the radio can be outfitted with a C-12631/PRC-149 Swimmer's Control Unit. This allows SAR teams free use of their hands while operating the radio. It will replace the AN/PRC-90-2, AN/PRC-112, and AN/PRC-125 through attrition.

(5) AN/PRC-90-2 Survival Beacon. The AN/PRC-90-2 Survival Beacon is a dual-channel personal emergency rescue transmitter, used principally for two-way voice or modulated Continuous Wave (CW) communications between a downed Aircrew member and a rescue aircraft. It also contains a swept-frequency homing beacon signal to guide rescue efforts. The hand-held AN/PRC-90-2 is battery-powered and contains a flexible antenna, interchangeable telescopic antenna, functional switch, CW button for Morse code, volume control, and earphone. The AN/PRC-90-2 is stowed in the SV-2B Survival Vest or in the Torso Harness when modified with survival pockets.

(6) AN/PRC-112 Radio Set. The AN/PRC-112 Radio Set is an UHF Amplitude Modulation voice radio with five operator selected frequencies (three are preset frequencies and two are operator-selectable). One of the programmable frequencies is normally used for Distance Measuring Equipment (DME) functions. DME permits an AN/ARS-6 equipped helicopter to query the AN/PRC-112 and receive a cockpit readout that provides an approximate direction and distance to the survivor. The AN/PRC-112 operates overtly by radiating a beacon signal with a range of approximately three times that of the AN/PRC-90-2. When placed in the transponder mode, the radio set operates covertly in conjunction with AN/ARS-6 SAR avionics equipment, providing bearing and range information to SAR forces. Powered by a lithium sulfur dioxide battery, it provides superior performance in cold weather operations. A new version of the AN/PRC-112 has been developed through the incorporation of Global Positioning System modules. Modified radios are labeled AN/PRC-112B and are currently in production. The AN/PRC-112 is stowed in the SV-2B Survival Vest or in the Torso Harness when modified with survival pockets, and is currently limited in use to forward-deployed troops and cold weather operations.

(7) AN/CRT-3 Series Radio Set. The AN/CRT-3 Series Radio Sets are emergency transmitting systems that enable downed Aircrewmen to send an automatic distress signal, or by using a manual key, to send coded signals to rescue parties. The AN/CRT-3 consists of a hand-generated, self-contained power supply and keying assembly. Also included are a three-position selector switch, push-button telegraph key, signal lamp and jack, antenna assembly, hand crank (for the generator), balloon and kite (to raise the antenna wire), and a hydrogen generator (to inflate the balloon). All items are packed into a floatable equipment container. The AN/CRT-3 differs from other survival radio applications in that it is carried in SAR aircraft, and dropped by parachute to downed aircrew personnel, instead of being immediately available as a part of their survival item kits.

i. Helmets and Eye Protection

(1) Helmets. Helmets provide face, eye, ear, and head protection during normal flight operations, in-flight buffeting, and emergency landings. Helmets are designed to distribute impact forces over the entire head and absorb these forces so that a minimum amount of impact reaches the wearer.

(a) HGU-68/P Helmet. The typical HGU-68/P Series Helmet consists of an outer shell assembly, form-fit or Thermoplastic Liner (TPL), visor, and communications system. The outer shell assembly is constructed of Kevlar and resin. A neoprene rubber beading provides protection from the shell edges. An adjustable boom type microphone is attached to the lower left side of the shell for use in non-tactical aircraft. The optional form-fit liner is constructed of polystyrene backing, a leather covering, and a comfort pad. The TPL assembly is a lightweight inner liner that consists of a five-layer, preformed plastic assembly and a removable, washable cloth cover. The earcup assemblies are made of molded plastic-formed cavities housing earphones that provide intercommunications within a sound attenuating environment. An ear seal is attached to the flat side of the earcup to provide comfort and an acoustic seal to the wearer. A visor assembly is installed on the upper front section of the outer shell. Single and dual lens visors are used with the lens lowered into a position over the eyes by a manual adjustment screw. The helmet assembly is secured to the head by a chin-nape strap. Cables attached to the helmet connect the earphones and boom microphone assembly to the aircraft's communications system or to the oxygen mask. Adapter plates are mounted on the outer shell to accommodate special equipment such as telescopic sight units and night vision systems. Individual configurations of the HGU-68/P Series were designed to meet Aircrew communication equipment in specific types of aircraft. Aircraft applications include the F-14, F-16, F/A-18 (without NCE installed), AV-8B, S-3, EA-6B, E-2C, C-2A, T-2, TA-4, T-34, and T-45.

(b) HGU-84/P Replacement Helicopter Helmet. The typical HGU-84/P Series Helmet features a lightweight outer shell assembly, constructed of a multi-layer mixed composite of graphite fabric and ballistic nylon fabric, with the helmet edge trimmed for optimal peripheral vision. They afford enhanced stability and comfort through the use of an integrated chin-nape strap and a TPL, are compatible for use with the AN/AVS-6 NVIIS, the MCK-3A/P CBR Protective Mask, and the MBU-17(V)2/P Oxygen Mask. Aircraft applications include all models of the H-1, H-2, H-3, H-46, H-53, H-57, and H-60; the HGU-82/P is being evaluated for use in the MV-22.

(2) Joint Advanced Laser Eye Protection Visor. The JALEPV is being developed as a day and night usable, low energy visor for use by fixed and rotary wing Aircrew in a fixed, multiple wavelength laser threat environment. There are three configurations of the JALEPV: EEU-12/P for all rotary wing aircraft, EEU-13/P for the HGU-87/P and HGU-89/P, and the EEU-14/P for the HGU-68/P. The JALEPV is also compatible with cockpit displays, night vision systems, and fire control systems. The JALEPV will be consumable; organizational level maintenance will be limited to cleaning and replacement.

(3) Joint Helmet Mounted Cueing System. The JHMCS is a helmet mounted cueing and display system which, in conjunction with the AIM-9X Sidewinder missile system, provides a high off-boresight capability for Navy and USAF tactical fighter aircraft. This capability gives the warfighter first-look, first-shot, air-to-air, and air-to-ground weapons and sensor cueing that allows eyes out of the cockpit targeting within the visual range arena. The JHMCS has produced major improvements in pilot situational awareness, with good overall system accuracy, faster target acquisition, and less exposure time. Refer to the JHMCS Initial NTSP listed in paragraph M. of this NTSP for more information on this program.

(4) Integrated Helmet Mounted Display and Sighting System. The AH-1Z incorporates an IHMDSS featuring dual Cathode Ray Tube projection onto the visor. The IHMDSS can display information from all aircraft sensors including the helmet's detachable low light image intensification camera. The IHMDSS allows flight instrument and situational symbology to be overlaid on the projected image.

j. Life Rafts. Life rafts are designed for use by Aircrew members and passengers forced down at sea. They can also be used on land to ford rivers or as shelters. One-man life rafts are most commonly used by aircrewmembers in ejection seat-type aircraft, in which case the life raft is an integral part of a soft or hard-type survival kit. Larger life rafts are normally stowed in readily accessible areas inside the aircraft fuselage in compartments specifically designed for that purpose. Some life rafts automatically inflate upon deployment.

Typical life raft assemblies used in military aircraft consist of a one, four, seven, twelve, or twenty-man life raft and an inflation assembly (CO₂ cylinder with inflation valve). MPLR assemblies consist of eight, twelve, and twenty-man configurations. The body of the life raft is comprised of an oval flotation tube constructed of rubberized fabric or polyurethane-coated cloth and an inflatable or non-inflatable floor. The flotation tube may be divided internally by vertical bulkheads to form separate inflatable compartments. The number of bulkheads required is determined by the size and load capacity. Each compartment has an inflation assembly consisting of a CO₂ cylinder and a topping-off tube. Survival equipment is stowed in accessory containers and supply pockets attached to the main tube. A sea anchor is attached to the bow of the raft.

(1) LR-1 Life Raft Assembly. The LR-1 is a one-man life raft utilized with various soft and hard type survival kits. It is intended for use by Aircrew personnel forced down at sea, and can also be used when forced down over land for fording rivers and streams or as shelter. The LR-1 is inflated either manually by pulling the inflation assembly actuating lanyard, or automatically by gravity drop on Seat Survival Kit actuation. The LR-1 is used in the C-2, E-2, T-2, T-34, T-39, KC-130, A-4, F-14, F/A-18, AV-8, and EA-6B aircraft, and all helicopters except the AH-1. The LR-1 Life Raft will be replaced through attrition with the LRU-18/U One-Man Vee Bottom Life Raft in Helicopter Backpack Assemblies.

(2) LRU-18/U Life Raft Assembly. The LRU-18/U is intended for use by Aircrew personnel forced down at sea, and can also be used when forced down over land for fording rivers and streams or as shelter. It is a lightweight one-man life raft designed to replace

the bulkier and heavier LR-1 in certain applications. The LRU-18/U is mandatory for use in the SRU-37/P Helicopter Backpack for use in all helicopters, and in the SKK-9 Survival Kit Container Assembly for use in E-2C Aircraft as part of the A/P22P-11 Crew Backpack.

(3) LRU-23/P Life Raft Assembly. The LRU-23/P is a one-man life raft intended for use by Aircrew personnel forced down at sea, is designed to provide insulation against low sea and air temperatures, and is stowed in individual seat survival kits. The components are constructed of dark blue single-ply, polyurethane-coated, nylon fabric and are assembled using radio frequency welding techniques. This type of fabric and construction reduces the weight and bulk of the life raft, enhancing its adaptability for use in seat survival kits. The LRU-23/P Life Raft is installed in seat survival kits used in F-14D, F/A-18, and T-45 aircraft equipped with SJU-17(V)/A NACES Ejection Seats.

(4) LRU-12/A (MK-4) Life Raft Assembly. The LRU-12/A (formerly MK-4) is a four-man inflatable life raft intended for use by Aircrew personnel forced down at sea. It is stowed in a readily accessible area inside the aircraft fuselage. The LRU-12/A in its life raft compartment installation is automatically inflated and ejected after the life raft compartment door has been released. The droppable configuration is inflated by pulling the inflation assembly ripcord handle. The four-man life rafts are installed in C-2 and H-3 aircraft, are programmed for obsolescence, and will be replaced through attrition by the LRU-30/A Eight-Man MPLR.

(5) LRU-13/A (MK-7) Life Raft Assembly. The LRU-13/A (formerly MK-7) is a seven-man inflatable life raft intended for use by Aircrew personnel forced down at sea. It is stowed in a readily accessible area inside the aircraft fuselage on all applicable aircraft except the C-2 where it is stowed in the life raft compartment. The LRU-13/A in its life raft compartment installation is automatically inflated and ejected after the life raft compartment door has been released. The droppable configuration is inflated by pulling the inflation assembly ripcord handle. LRU-13/A Seven-Man Life Rafts are installed in C-2, C-130, H-3, H-46, H-53, H-57, HH-60H, and P-3 aircraft. The LRU-13/A is being replaced through attrition by the LRU-30/A Eight-Man MPLR.

(6) LRU-14(A)/A (MK-12A-1) Life Raft Assembly. The LRU-14A/A (formerly MK-12A-1) is a twelve-man inflatable life raft intended for use by Aircrew personnel forced down at sea. It is stowed in a readily accessible area inside the aircraft fuselage or in an aircraft compartment designed for rafts. The LRU-14A/A in its life raft compartment installation is automatically inflated and ejected after the life raft compartment door has been released. The droppable configuration is inflated by pulling the inflation assembly ripcord handle. The LRU-14/A configuration was changed to LRU-14A/A by adding a canopy with related components and a heaving line with a pocket. LRU-14A/A Twelve-Man Life Rafts are installed in H-46A/D/E, CH-53A/D, and P-3 Aircraft. The LRU-14A/A is being replaced through attrition by the LRU-31/A Twelve-Man MPLR.

(7) LRU-15/A (MK-20) Life Raft Assembly. The LRU-15/A (formerly MK-20) is a twenty-man inflatable life raft intended for use by Aircrew personnel forced down at

sea. It is stowed in a readily accessible area inside the aircraft fuselage or in an aircraft compartment designed for rafts. The LRU-15/A in its life raft compartment wing installation is automatically inflated and ejected after the life raft compartment door has been released. The droppable configuration is inflated by pulling the inflation assembly ripcord handle. A unique design feature of the LRU-15/A is that it is always right-side-up after inflation. LRU-15/A Twenty-Man Life Rafts are installed in E/K/LC-130F/G/R/Q, C-117D, C-118B, C-131F/G, and H-53A/D/E aircraft. The LRU-15/A is being replaced through attrition by the LRU-32/A Twenty-Man MPLR.

(8) Multi-Place Life Rafts. The MPLRs are intended for use by Aircrew personnel forced down at sea. The rafts come in three configurations: eight-man LRU-30/A, twelve-man LRU-31/A, and twenty-man LRU-32/A. The MPLRs are constructed of polyurethane-coated cloth with thermobonded seams. Their design incorporates an auto-erecting canopy, auto-inflating boarding ramps, an insulating floor, and internal and external lights. The rafts are vacuum-packed and come with an accessory container capable of holding all the required USN survival items. The vacuum-packed raft rests on top of the accessory container with both the raft and accessory container contained in the carrying case. The raft is inflated by pulling the inflation assembly ripcord handle located on the end of the carrying case. The life raft, canopy, and boarding ramps fully inflate automatically. After boarding, the attached accessory container is pulled into the raft to access survival items. The MPLR is Federal Aviation Administration (FAA) approved, and is intended to replace all multi-place life rafts applications through attrition in all aircraft, both fixed and rotary wing, in all services. Navy specific aircraft applications will be in accordance with applicable Naval Air Training and Operating Procedures Standardization (NATOPS) requirements.

k. Oxygen Supply Systems. Refer to the NAOS NTSP, N78-NTSP-A-50-8603C/D for information on Oxygen Supply Systems.

l. Oxygen Regulators. Refer to the NAOS NTSP, N-78-NTSP-A-50-8603C/D for information on Oxygen Supply Systems.

m. Personal Flotation Equipment. Personal Flotation Equipment (life preservers) are worn by Aircrew personnel on over-water flights. In the event of bail out, ejection, or ditching, the device keeps the wearer afloat until a raft is boarded or a rescue team arrives. There are two basic models of life preservers, the LPP Series for passenger use and the LPU Series for continuous wear by Aircrew personnel. The basic LPU Series assembly consists of a two-chambered flotation assembly constructed of polychloroprene-coated nylon cloth, a casing assembly, two carbon-dioxide inflation assemblies, an oral inflation tube, and survival item pouches which contain dye markers and flares. The pouches are attached to the casing assembly with snap hooks. The dye marker and signal flares are not initially supplied and must be individually requisitioned. It weighs four pounds without survival items and provides a minimum of 65 pounds of buoyancy. LPU Series Life Preservers configured for ejection seat use incorporate an FLU-8B/P Auto-Inflation Device that activates upon water entry.

(1) LPP-1/1A Life Preserver Assembly. The LPP-1/1A is authorized for passengers in cargo or transport type aircraft, both fixed and rotary wing. It consists of a single compartment, yoke-type flotation assembly, a pouch and belt assembly, an inflation assembly, and a storage container, weighs approximately three pounds, and provides a minimum of 29 pounds of buoyancy. The flotation assembly is constructed of polychloroprene-coated nylon cloth, and is equipped with an oral inflation valve, signal light, and whistle. The pouch and belt assembly consists of a rubber-coated nylon cloth pouch and adjustable belt, and houses the flotation assembly when not in use. The LPP-1/1A is currently programmed for obsolescence and is being replaced by the LPU-32/P.

(2) Pouch Type Life Preserver Assembly. The Pouch Type Life Preserver is authorized for all troop passengers on Marine Corps helicopters for sea survival situations. It is a standard abandon ship type life preserver used throughout the fleet, adapted for use in Marine Corps aircraft, weighs two pounds, and provides a minimum of 29 pounds of buoyancy. The Pouch Type Life Preserver consists of a single compartment flotation assembly, an inflation assembly, belt, hoisting strap, and a pouch. The Pouch Type Life Preserver was introduced for use as an interim measure to fill outstanding back orders of the LPP-1/1A, and is being evaluated for replacement by the LPU-32/P.

(3) LPU-21/P Series Life Preserver Assembly. The LPU-21/P Series is authorized for all Aircrew personnel wearing compatible flight clothing in non-ejection seat aircraft. It is designed as a constant wear item for use with the survival vest and will not interfere with the removal of the nonintegrated parachute harness.

Modifications to the LPU-21B/P have resulted in new letter designations being assigned. Newly procured LPU-21/P Series are designated LPU-21D/P and feature a heat-sealed flotation bladder assembly. The LPU-21C/P Flotation Assembly may be used in conjunction with the LPU-21D/P Casing Assembly, and is designated the LPU-21C(V)1/P in this configuration.

(4) LPU-23/P Series Life Preserver Assembly. The LPU-23/P Series is authorized for all Aircrew personnel in ejection seat aircraft. It is designed as a constant wear item for use with the survival vest and will not interfere with the removal of the nonintegrated parachute harness.

LPU-21/P and LPU-21A/P configured with the FLU-8B/P Automatic Inflation Device are designated LPU-23A/P. Automatic inflation devices are not initially supplied and must be individually requisitioned. Subsequent procurements of the LPU-23/P Series were designated LPU-23B/P. Newly procured LPU-23/P Series are actually LPU-21D/P Life Preservers, which when coupled with the FLU-8B/P Automatic Inflation Device are designated LPU-23C/P. The LPU-23B/P Flotation Assembly may be used in conjunction with the LPU-21C/P Casing Assembly, and is designated LPU-23B(V)1/P when configured as such. However, the LPU-23C/P Flotation Assembly may not be used with the LPU-23B/P Casing Assembly.

(5) LPU-27/P22P-7(V) Life Preserver Assembly. The LPU-27/P22P-7(V) is an LPU-21B/P or LPU-21C/P that has been modified in accordance with Aircrew Systems Change 523 and is not a procured item. The modification added an extension panel to increase the length of the casing webbing belt, and is designed for wear by Aircrew personnel of patrol aircraft and as authorized by area type commanders. The extension panel provides the capability of wearing the life preserver with or without the anti-exposure garment.

(6) LPU-28/P and Lifesaving Systems Corporation (Part Number 482) Life Preserver Assemblies. The LPU-28/P and Lifesaving Systems Corporation (LSC) Part Number 482 are authorized for use by helicopter Rescue Aircrewmembers during SAR, and are designed for compatibility with helicopter helmets. They provide storage and pile tape attachment points for the SDU-5/E Distress Light and the AN/PRC-125 Radio. Both assemblies weigh a maximum of 2.5 pounds without accessories and provide a minimum of 30 pounds of buoyancy. They consist of a single compartment flotation assembly, a casing assembly, a waist belt, and a carbon dioxide inflation assembly. The LPU-28/P incorporates a diver's oral inflation valve (mouthpiece type) and a pressure relief valve. The LSC P/N 482 is a modified LPU-28/P with a standard oral inflation tube with a knurled ring locking mechanism; it does not incorporate a pressure relief valve.

(7) LPU-31/P Life Preserver Assembly. The LPU-31/P is authorized for helicopter combatant Aircrewmembers using the T-65 Body Armor. It is composed of the LPP-1/1A Life Preserver and a protective bladder cover, weighs approximately four pounds, and provides a minimum of 29 pounds of buoyancy. Although the LPP-1/1A is currently programmed for obsolescence through attrition, there are no current plans to replace the LPU-31/P with the LPU-32/P.

(8) LPU-32/P Life Preserver Assembly. The LPU-32/P is authorized for passengers and troops in helicopter or transport type aircraft for sea survival situations. It is designed such that one size fits all. It consists of a life preserver yoke assembly in addition to the survival items, a sea-dye marker, a whistle, and a chemlite. The yoke assembly consists of a flotation assembly, two inflators, and a casing cover assembly that includes the belt assembly and the survival items pouch. The LPU-32/P weighs approximately four pounds and provides a minimum of 40 pounds of buoyancy. The LPU-32/P replaced the LPU-30/P and is replacing the LPP-1/1A models through attrition. When either model is available, the LPU-32/P is the preferred life saving device. The LPU-30/P is no longer authorized for use in Naval aircraft.

(9) LPU-33/P Low Profile Flotation Collar. The LPU-33/P LPFC is equipped with the FLU-8B/P Automatic-Manual Inflator. It is designed as a constant wear item for use with survival vests and other Aircrew equipment in aircraft equipped with ejection seat systems as a replacement for the LPU-23/P Series. Weighing only 3¼ pounds, the LPU-33/P provides a minimum of 65 pounds of buoyancy. It consists of multiple components compactly packed into an exterior cover assembly (casing assembly). The flotation assembly consists of two independent inflatable assemblies (bladders), each with a FLU-8B/P Automatic-Manual Inflator and an oral inflation valve. The bladders are packed inside a black cloth inflation shell.

Four straps on the inflation shell pass through grommets on the exterior cover to attach the life preserver to the modified torso harness or survival vest. Two additional straps adjust a plastic buckle that snaps across the wearer's chest to keep the LPU-33/P in position when worn. A beaded handle connected to the FLU-8B/P is mounted on each side of the exterior cover to manually initiate inflation.

(10) LPU-34/P Low Profile Flotation Collar. The LPU-34/P LPFC is identical to the LPU-33/P LPFC except that it is equipped with two manually operated inflation devices. It is designed as a constant wear item for use with compatible clothing and other crew equipment in non-ejection seat fixed wing aircraft, helicopters, and the MV-22 as a replacement for the LPU-21/P Series. The LPU-34/P has a zipper (slide fastener) the same color as the exterior cover to aid in distinguishing it from the LPU-33/P, which has a black zipper and is equipped with automatic inflation devices.

(11) LPU-35/P Life Preserver Assembly. The LPU-35/P is a modified LPU-21D/P and is not a procured item. The modification added an extension panel to increase the length of the waist portion of the casing assembly, and is designed for wear by Aircrew personnel of non-ejection seat aircraft over cold weather flight clothing. The extension panel provides the capability of wearing the life preserver with or without the anti-exposure garment.

(12) LPU-36/P Low Profile Flotation Collar. The LPU-36/P LPFC is equipped with the FLU-8B/P Automatic-Manual Inflator. It is designed as a constant wear item for use with survival vests and other Aircrew equipment in aircraft equipped with ejection seat systems as a replacement for the LPU-33/P Series. Weighing only 3¼ pounds, the LPU-36/P provides a minimum of 65 pounds of buoyancy. It consists of multiple components compactly packed into an exterior cover assembly (casing assembly). The flotation assembly consists of two independent inflatable assemblies (bladders), each with a FLU-8B/P Automatic-Manual Inflator and an oral inflation valve. The bladders are packed inside a black cloth inflation shell. Four straps on the inflation shell pass through grommets on the exterior cover to attach the life preserver to the modified torso harness or survival vest. Two additional straps adjust a plastic buckle that snaps across the wearer's chest to keep the LPU-36/P in position when worn. A beaded handle connected to the FLU-8B/P is mounted on each side of the exterior cover to manually initiate inflation.

(13) FLU-8B/P Automatic Inflation Device. The FLU-8B/P is a sealed, cartridge actuated automatic inflation device consisting of a sensor housing and body assembly, a 35-gram CO₂ cylinder, sensor plug, packaging loop, and a top and bottom gasket. The sensor housing contains an electronic circuit that initiates automatic inflation of the life preserver when immersed in fresh or salt water. Pulling on a beaded handle that is connected to each inflation device by an inflation lanyard and casing flap locking pin initiates manual inflation. Manual inflation is the primary means of actuating the inflation device, and the automatic mode is a secondary back up in the case of injured or unconscious Aircrew personnel. The FLU-8B/P is only used in life preservers configured for ejection seat aircraft applications, and has replaced the FLU-8A/P through attrition.

n. Parachutes. There are two types of parachutes utilized in Naval aircraft, drogue and personnel. Drogue parachutes are connected to ejection seats, provide deceleration and stabilization of the seat during the bailout trajectory, and initiate the deployment of the personnel parachute. A personnel parachute is an escape device that retards the speed of an Aircrew member's descent after bailout or ejection from a disabled aircraft, allowing for a safe, controlled ground or water landing. Backpack and chest-mounted parachutes are used in aircraft that do not have ejection systems installed. Navy Egress System type parachutes are used with ejection systems and are an integral part of the ejection seat.

There are four basic personnel parachutes used in Navy aircraft:

- Twenty-eight foot diameter, flat, circular, nylon canopy with 28 gores (or sections)
- Twenty-six foot diameter, conical, nylon canopy with 22 gores
- Twenty-one foot diameter, aeroconical, nylon canopy with 20 gores
- Seventeen foot diameter, aeroconical, nylon canopy with 20 gores

They are multi-colored with white, olive green, sand, and international orange shades, providing downed Aircrew personnel camouflage in snow, forest, and desert environments, and a means to signal rescue aircraft. The basic drogue parachute system consists of two parachutes: a 22-inch diameter controller drogue and a five-foot diameter stabilizer drogue, both fabricated of cotton material and interconnected by a connecting line to the apex of the personnel parachute.

The parachute assembly consists of five major components: harness, container, suspension lines, canopy, and pilot chute. The harness is an arrangement of nylon webbing and metal fittings designed to hold the parachute assembly securely to the wearer and provide a seat or sling during descent, and is an integral part of the container for backpack style parachutes. Ejection seat applications utilize the PCU-26/P, PCU-33/P, and PCU-56/P Series Torso Harnesses. The container encloses the pilot chute, canopy, and suspension lines while not in use. The suspension lines are made of nylon and join the canopy to the harness. The canopy is a large round area of nylon cloth that, when inflated, slows the descent of the wearer. The pilot chute is a small parachute attached to the top of the canopy. When the parachute is used, the pilot chute accelerates the deployment of the main canopy and suspension lines. Parachutes configured for ejection seat use incorporate Parachute Harness Sensing Release Units (PHSRU), also known as the Seawater Activated Release System (SEAWARS).

(1) NC-3 Personnel Parachute Assembly. The NC-3 is a chest-type parachute with a 28-foot standard flat canopy. The harness is an integral part of the container assembly, and comes in two sizes, regular and oversize. It may also be used in-service with the Standard Soft Pack (SSP) packaged LR-1. The NC-3 is used for emergency bailout from the C-130 Aircraft.

(2) NB-6 Personnel Parachute Assembly. The NB-6 is a back type parachute with a 26-foot conical canopy. The harness is an integral part of the container

assembly, and comes in two sizes, regular and oversize. The addition or absence of a Model 7000 Automatic Parachute Ripcord Release and lanyard assembly makes up two additional configurations of the parachute. It may also be used in-service with the SSP packaged LR-1 or with the SP-1A Seat Pan Assembly. The NB-6 is used for emergency bailout from the T-34 Aircraft.

(3) NB-7 Personnel Parachute Assembly. The NB-7 is a back type parachute with a 28-foot standard flat canopy and is designed for use with the PCU-33/P or PCU-56/P Series Torso Harness Assemblies. It is mated to a seat survival kit by a slide fastener and then installed in the aircraft seat. Two different configurations of the parachute are made through the addition or absence of SEAWARS. The NB-7 is used for emergency bailout from the E-2 Aircraft.

(4) NB-8 Personnel Parachute Assembly. The NB-8 is a back type parachute with a 28-foot standard flat canopy. The harness is an integral part of the container assembly and comes in two sizes, regular and oversize. It may also be used in-service with the SSP packaged LR-1 or with the SP-1A. The NB-8 is used for emergency bailout from the C-2, C-130, P-3, and T-39 aircraft. The P-3 application is currently being replaced by the A/P22P-21 Crew Backpack Assembly.

(5) NES-12 Personnel Parachute Assembly. The NES-12 is an ejection seat, back type parachute with a 28-foot standard flat canopy. It works in conjunction with the Douglas ESCAPAC Ejection Seat System, and is designed for use with the PCU-33/P or PCU-56/P Series Torso Harness Assemblies. It incorporates a Model 7000 Automatic Parachute Ripcord Release and lanyard assembly, a ballistic spreading gun assembly, and SEAWARS. A unique feature of this parachute assembly is the use of a tri-stage external pilot parachute stowed in a pocket on the container flap. The tri-stage external pilot parachute serves the same purpose as a drogue parachute system, that of deceleration and stabilization of the seat during the bailout trajectory and to initiate the deployment of the personnel parachute. The container has two strap adapters for attachment of the seat survival kit, and in S-3 Aircraft applications, a lumbar pad is used to provide back support. The NES-12 is used in S-3 and TA-4 aircraft.

(6) NES-14 Personnel Parachute Assembly. The NES-14 is an ejection seat type parachute with a 28-foot standard flat canopy. It works in conjunction with the MK-GRU-7/7A/EA7 Drogue Parachute Assemblies as part of the Martin Baker MK-GRU-7/7A/EA7 Ejection Seat Systems, is designed for use with the PCU-33/P or PCU-56/P Series Torso Harness Assemblies, and incorporates SEAWARS. The NES-14 is used in EA-6B and F-14A/B aircraft.

(7) NES-25A Personnel Parachute Assembly. The NES-25A is an ejection seat, back type parachute with a 28-foot standard flat canopy. It works in conjunction with the LS-1 Drogue Parachute Assembly as part of the North American Aviation LS-1 Ejection Seat Escape System, and is designed for use with the PCU-33/P or PCU-56/P Series Torso Harness Assemblies. It incorporates a Model 7000 Automatic Parachute Ripcord Release and lanyard assembly, a ballistic spreading gun assembly, and SEAWARS. The NES-25A is used in T-2 Aircraft.

(8) A/P22P-11 Emergency Egress Crew Backpack Assembly. The A/P22P-11 is a back type parachute with a 26-foot conical canopy, and is designed for use with the PCU-33/P or PCU-56/P Series Torso Harness Assemblies. The two-piece, upper and lower crew backpack containers are constructed of rigid fiberglass material, and are mated by two hinges and straight pins. The upper container houses the parachute, and the lower container houses an SSK-9/P22P-11 Seat Survival Kit Assembly, an emergency oxygen system assembly, LRU-18/U, and survival items. The A/P22P-11 is used for emergency bailout from the E-2C Aircraft.

(9) A/P22P-21 Crew Backpack Assembly. The A/P22P-21 is a back type parachute with a 266-foot extended skirt canopy, made from low-porosity material that is vacuum sealed to protect the main canopy from physical and environmental hazards. The assembly is composed of a pilot parachute assembly, pilot parachute bridle cord, sealed canopy bridle cords, PCU-71/P22P-21 sealed canopy assembly, harness/container assembly, and a ripcord with housing. The sealed canopy assembly has a scheduled replacement interval of five years. The A/P22P-21 is used for emergency bailout from the P-3 Aircraft, and is designed to replace the NB-8 Backpack Assembly.

(10) A/P28S-24 Personnel Parachute Assembly. The A/P28S-24 is an ejection seat, headrest type, maneuverable, recovery parachute with a Type 1000 17-foot Aeroconical Canopy. It is integral to the SJU-5/A and SJU-6/A Aircrew Automated Ejection Seat Escape System, is designed for use with the PCU-33/P or PCU-56/P Series Torso Harness Assemblies, and incorporates SEAWARS. The rear of the canopy has two orifices covered with Terylene netting, located 90-degrees apart in gores 4 and 18, to provide forward thrust and horizontal velocity. Two steering lines provide directional control during descent. The aeroconical canopy and the duplex drogue parachute assemblies are packed in a rigid container that is also the headrest for the ejection seat. The A/P28S-24 is used in the F/A-18A/B and F/A-18C/D (Lot 12 only) Aircraft.

(11) A/P28S-28, -30, -31 Headrest Assemblies. The A/P28S-28, -30, and -31 are ejection seat, headrest type parachutes using a 28-foot standard flat canopy. They are integral to the SJU-4/A, -13/A, and -14/A Ejection Seat Escape Systems using the PCU-29/A Drogue Parachute, are designed for use with the PCU-33/P or PCU-56/P Series Torso Harness Assemblies, and incorporate SEAWARS. The A/P28S-28, -30, and -31 are used in AV-8B and TAV-8B aircraft.

(12) A/P28S-32 Personnel Parachute Assembly. The A/P28S-32 is an ejection seat, headrest type, maneuverable, recovery parachute with a Type 5000 21-foot Aeroconical Canopy. It is integral to the SJU-17 Series NACES Escape Systems, is designed for use with the PCU-33/P or PCU-56/P Series Torso Harness Assemblies, and incorporates SEAWARS. There are five variants of the A/P28S-32, each basically similar, with the difference being confined to the shape and size of the aircraft canopy breakers on the parachute container.

The canopy has two Le-Moigne slots located 180-degrees apart in gores 6 and 16 to provide directional control and forward velocity on command. The Le-Moigne slots

are locked in the closed position by toggle and handle to ensure that the parachute descends vertically on initial opening. Directional control and forward velocity is initially selected by pulling down the two handles between the risers, unlocking the toggle from its loop securing the slots in the closed position. Once the handle and toggle are pulled and the tension is released from the steering lines, the slots open and provide forward drive to the canopy. The aeroconical canopy is packed into a deployment sleeve assembly, which is then packed into a rigid container that attaches to the upper forward face of the ejection seat and serves as a headrest for Aircrew personnel. The A/P28S-32 is used in the T-45A, F-14D, F/A-18C/D (except Lot 12), and F/A-18E/F Aircraft.

(13) MXU-746/P and MXU-747/P Parachute Harness Sensing Release

Units. The PHSRU, also known as SEAWARS, provides a cartridge activated backup automatic mode of separating the parachute from Aircrew personnel. Manually activating the canopy release assembly is the primary mode of separating the risers from the Aircrew. Automatic release is intended for disabled Aircrew personnel or when there is insufficient time to manually activate the release. SEAWARS are designed to release within two seconds after seawater entry. Immersion in fresh water will not activate SEAWARS. The SEAWARS consists of two PHSRUs, both fitted to each set of parachute risers. The left and right sets of risers are designated MXU-746/P and MXU-747/P, respectively. Aircraft application is as described in the associated parachute aircraft applications listed above.

o. Rescue Equipment. Rescue Equipment is comprised of common tools and special equipment used by SAR teams to extract downed Aircrewmen. Rescue equipment consists of Aldis lamps, cable grips, carabiners, chemical lights, belay ropes, electric sea markers, pneumatic hand tools, hoisting slings, hoisting vests, forest penetrators, rescue hooks, litters, rescue medical kits, mountain boots, rescue nets, rescue straps, portable oxygen systems, and rappelling equipment. A detailed description of each item may be found in the Aviation Crew Systems Manual, NAVAIR 13-1-6.5.

p. Search and Rescue Swimmer's Personal Equipment. The SAR swimmer's ensemble is an exposure protective assembly designed for continuous wear, and protects the SAR swimmer from exposure to cold water, wind, and spray resulting from emergency rescue actions at sea. The SAR swimmer's wet-suit ensemble consists of a custom made two-piece Farmer John style wet suit, a custom-made two-piece shorty wet suit, hood, gloves, boots, and mask. The mask has a wrap-around face plate made of tempered glass. The snorkel is made of a flexible hose unit and has a mouthpiece attached to a solid upper tube. The swim fins are constructed of solid pliable rubber with adjustable straps and buckles.

q. Seat Survival Kits. The typical seat survival kit is designed for use with a specific ejection system and functions as a seat for the Aircrew member. It serves as a container for an emergency oxygen system, life raft, and survival equipment required after ejection. A seat survival kit is a rigid-type container fabricated of molded fiberglass and fits into the seat bucket. It is securely attached by lock receptacles at the lower aft corners of the seat bucket and a negative-G retaining pin receptacle at center forward on the lower container. During normal

operation, the kit provides support and comfort for the Aircrewman as well as routing for emergency oxygen and communications. If failure occurs in the aircraft oxygen supply, or in case of high altitude or underwater ejection, the kit provides an emergency supply of oxygen for approximately 20 minutes. The lid of the container is fastened to a metal valance and contains the latches and oxygen equipment.

The lower portion of the container consists of the latching mechanism, life raft, and survival equipment including an emergency radio beacon. The radio beacon lanyard is attached to the aircraft and is actuated when the Aircrewman ejects. The two parts of the kit are fastened together by a lock and latch mechanism and can be quickly separated for access to the life raft and survival equipment. The ventilated seat cushion and the non-ventilated thigh support cushions are attached with hook and loop fasteners.

(1) SKK-9 Life Raft and Survival Kit. The SKK-9 is part of the A/P22P-11 Crew Backpack Assembly. It functions as a backrest for Aircrew personnel, a container for a parachute assembly, a container for an emergency oxygen system, and as a life raft and survival items container. It is made up of a rigid two-piece fiberglass container and houses an LRU-18/U one man vee-bottom life raft in the lower container on the right hand side. The SKK-9 is not designed for use independent of the A/P22P-11 Crew Backpack; it is used for emergency bailout from the E-2C Aircraft.

(2) Soft Pack Survival Kits. The Seat Pans (Douglas, P/N 5811863-503, and the SP-1A, P/N 68A74E1-1) are designed for use with both ejection and non-ejection seats and function as a seat for Aircrew personnel as well as a container for an emergency oxygen system. The Soft Pack Survival Kits (Standard, Special, High Speed, and Modified High Speed Soft Packs) may be used with the seat pans and function as a container for a life raft and survival items. These Seat Pans and Soft Pack Survival Kits are used in conjunction with the NC-3, NB-6, and NB-8 Parachute Assemblies in C-2, C-130, P-3, T-34, and T-39 aircraft.

(3) Ventilated Seat Pan. The Ventilated Seat Pan is designed for use with non-ejection seat aircraft. It functions as a seat for Aircrew personnel as well as a container for an emergency oxygen system, and is attached to a SSP Survival Kit. The Ventilated Seat Pan and SSP are used in the E-2C and C-2A aircraft.

(4) RSSK-3 Seat Survival Kit. The RSSK-3 is designed for use with the North American LS-1 Ejection Seat and functions as a seat for Aircrew personnel as well as an emergency oxygen system, life raft, and survival equipment container. Manufactured by North American Rockwell Corporation, the RSSK-3 is used in T-2 Series Aircraft.

(5) RSSK-8 Series Seat Survival Kit. The RSSK-8 Series is designed for use with Douglas ESCAPAC Ejection Seats and functions as a seat for Aircrew personnel as well as an emergency oxygen system, life raft, and survival equipment container. There are three manufacturers of the RSSK-8 Series, Rocket Jet Engineering Corporation, Scott Aviation Corporation, and East-West Industries. The RSSK-8 Series is used in all models of the A-4 and S-3 aircraft.

(6) SKU-2/A Seat Survival Kit. The SKU-2/A is designed for use with the MK-GRU-7, MK-GRU-7A, and MK-GRUEA-7 Ejection Systems and functions as a seat for Aircrew personnel and as an emergency oxygen system, life raft, and survival equipment container. The basic SKU-2/A is manufactured by East-West Industries, and Grumman Aerospace Corporation supplies complete assemblies. The SKU-2/A is used in the F-14A/B and EA-6B aircraft.

(7) SKU-3/A Seat Survival Kit. The SKU-3/A is designed for use with the SJU-5/A and SJU-6/A Ejection Seats and functions as a seat for Aircrew personnel and as an emergency oxygen system, life raft, and survival equipment container. The basic SKU-3/A is manufactured by East-West Industries, and McDonnell Aircraft Company supplies complete assemblies. The SKU-3/A is used in the F/A-18A/B and F/A-18C/D (Lot 12 only) aircraft.

(8) SKU-6/A Seat Survival Kit. The SKU-6/A is designed for use with the SJU-4/A Ejection Seat and functions as a seat for Aircrew personnel and as an emergency oxygen system, life raft, and survival equipment container. The basic SKU-6/A is manufactured by East-West Industries, and Stencel Aero Engineering Corporation supplies complete assemblies. The SKU-6/A is used in the AV-8B Aircraft.

(9) SKU-7/A Seat Survival Kit. The SKU-7/A is designed for use with the SJU-17(V)3/A and SJU-17(V)4/A versions of the NACES Ejection Seat System, and functions as a seat for Aircrew personnel and as an emergency oxygen system, life raft, and survival equipment container. The basic SKU-7/A is manufactured by East-West Industries, and Martin-Baker Limited supplies complete assemblies. The SKU-7/A is used in the F-14D Aircraft.

(10) SKU-10/A Seat Survival Kit. The SKU-10/A is designed for use with the SJU-17(V)1/A and SJU-17(V)2/A versions of the NACES Ejection Seat System, and functions as a seat for Aircrew personnel and as an emergency oxygen system, LRU-23/P Life Raft, and survival equipment container. The basic SKU-10/A is manufactured by East-West Industries, and Martin-Baker Limited supplies complete assemblies. The SKU-10/A is used in the F/A-18C Bureau Numbers 164197 and subsequent, F/A-18D Bureau Numbers 164196 and subsequent, and F/A-18E/F Aircraft.

(11) SKU-11/A Seat Survival Kit. The SKU-11/A is designed for use with the SJU-17(V)5/A and SJU-17(V)6/A versions of the NACES Ejection Seat System, and functions as a seat for Aircrew personnel and as an emergency oxygen system, LRU-23/P Life Raft, and survival equipment container. The basic SKU-11/A is manufactured by East-West Industries, and Martin-Baker Limited supplies complete assemblies. The SKU-11/A is used in the T-45A Aircraft.

(12) SKU-12/A Seat Survival Kit. The SKU-12/A is designed for use with the MK-GRU-7, MK-GRU-7A, and MK-GRUEA-7 Ejection Systems and functions as a seat for Aircrew personnel and as an emergency oxygen system, life raft, and survival equipment container. The basic SKU-12/A is manufactured and supplied by American Safety Flight

Systems. The SKU-12/A is used in the F-14A/B Bureau Numbers 157980 through 159630 and EA-6B Bureau Numbers 159631 and subsequent.

r. Survival Vests

(1) SV-2B Survival Vest. The SV-2B is designed for use by all Aircrew members except when small arms protective body armor is worn. The vest provides storage for survival equipment while maintaining minimum bulk and weight. Additionally, the vest provides for integration of a life preserver and chest-mounted oxygen regulator. It does not interfere with use of either the regular or integrated-type parachute harness.

The SV-2B is constructed basically of nylon cloth. An adjustable harness, leg straps, and entrance side fastener provide the means of fitting and securing the vest to the Aircrew member. Elastic straps at the rear allow for greater mobility. Pockets are provided for stowage of survival items. When required, a chest-mounted oxygen regulator is located inside a fabric sleeve and secured to the vest with Velcro.

(2) CMU-21/P22P-7(V) Survival Vest. The CMU-21/P22P-7(V) is an SV-2B modified by Aircrew Systems Change (ACC) 522 and is not a procured item. The modification allows for expansion of the vest's circumference for wear over bulky clothing, and is designed for use of Aircrew members in patrol aircraft.

(3) CMU-23()/P Survival Vest. The CMU-23/P Series is an SV-2B modified by ACC 506 for use with helicopter Aircrew equipped with the A/P22P-9(V) CBR Protective Clothing Ensemble, and is not a procured item. The CMU-23A/P is an SV-2B or CMU-23/P modified by ACC 616 for rotary wing Aircrews who are equipped with the A/P22P-14(V)1 CBR NDI Respirator Assembly and is a dual-purpose vest. For routine missions where there is no potential of CBR exposure, the CMU-23A/P vest is configured like a normal SV-2B. With interchangeable pocket configuration, however, the CMU-23A/P vest can be quickly reconfigured for missions requiring CBR protection.

(4) CMU-24/P Survival Vest. The CMU-24/P is designed for use by all over-land SAR and TH-57 Helicopter Aircrew members. The vest provides storage for survival equipment necessary during over-land missions. The CMU-24/P is constructed of nylon mesh fabric with woven nylon pockets. It has a separating slide fastener front closure and lacing located on the back for size adjustment.

(5) CMU-29(V)2/P Chemical Biological Radiological Overvest. The CMU-29(V)2/P is used to store the pusher fan and filter canister when the A/P22P-14(V) CBR Respirator Assemblies are worn by fixed wing Aircrews. It is worn over either the CMU-23A/P or CMU-33/P. It is constructed primarily of nylon mesh, nylon straps, and nylon cloth, and incorporates adjustable shoulder and waist straps along with a front slide fastener. Pockets are provided for stowage of the pusher fan and filter canister, battery, flashlight, hook knife, and oxygen mini-regulator.

(6) CMU-30/P22P-15 Survival Vest. The CMU-30/P22P-15 is designed specifically for helicopter Aircrews operating in hostile territory, and is compatible with the LPU-21/P and both soft and hard body armor. The survival equipment pockets are modular in design so location of survival items may be changed upon approval of the type commander.

(7) CMU-33/P22P-18(V) Survival Vest. The CMU-33/P22P-18(V) is an integral component of the A/P22P-18(V) Aircrew Survival - Armor Protective Assembly, and is designed to be compatible with PRU-60A/P22P-15 and PRU-61A/P22P-15 Armor Assemblies, Army .50 caliber armor assembly, and Navy, Air Force, and Army life preserver assemblies. The survival equipment pockets are modular in design so location of survival items may be configured to suit Type Commander requirements and different environments. There are two configurations of the vest, Type I and Type II.

The Type I vest has an integrated removable hoisting harness, designed for use by Aircrews of helicopters and most fixed-wing non-ejection seat aircraft, and is currently being evaluated for use in the V-22 Aircraft. The Type II vest has no integrated hoisting harness but comes with torso harness attachment straps, and is designed to integrate with the PCU-33 Series or PCU-56 Series Torso Harnesses worn by fixed-wing ejection seat aircraft Aircrews and some fixed-wing non-ejection seat aircraft.

s. Aircrew Survival Armor Protective Assemblies

(1) A/P22P-15 Helicopter Aircrew Survival and Armor Protective Assembly. The A/P22P-15 fully integrates a CMU-30/P22P-15, LPU-21/P, and PRU-61/P22P-15 Hard and PRU-60/P22P-15 Soft Small Arms Protective Body Armor. It provides protection, both front and back, for the vital organs of the Aircrew member's torso against armor-piercing rounds up to .30 caliber, and has been designed to provide one-hand, two-operation quick disconnect of the hard armor plates. The PRU-60/P22P-15 soft armor provides Type IIIA protection against small arms such as the .44 magnum and 9 mm. The PRU-61/P22P-15 Hard Armor provides Type IV protection, or up to .30 caliber armor-piercing bullets.

(2) A/P22P-18(V) Aircrew Survival - Armor Protective Assembly. The A/P22P-18(V) (formerly referred to as AIRSAVE) is a Joint, Tri-Service effort designed to replace existing survival vests (Navy and Marine Corps AISAP, Army SARVIP, and Air Force CMU-21/P) and be usable in all aircraft communities. It consists of a Type I or II CMU-33/P22P-18(V) Survival Vest, soft or hard body armor, and a flotation assembly. It is compatible with the Navy and Marine Corps LPU-21/P, LPU-23/P, LPU-33/P, and LPU-34/P; the Air Force LPU-9; and the Army LPU-10 Life Preservers. Enhanced Aircrew vital organ protection is provided since the vest is also compatible with PRU-60/P22P-15 Soft and PRU-61/P22P-15 Hard Armor and the Army .50 caliber armor plate. It has been designed to provide one-hand, two operation quick disconnect of the hard armor plate.

t. Torso Harness. The Torso Harness provides for the integration of the parachute harness, lap belt assembly, shoulder restraint, and rescue harness. The harness provides mobility while restraining the wearer to the seat during emergency conditions, and

serves as a parachute harness during ejection. The torso harness consists of a nylon webbing harness. An adjustable shoulder restraint with quick-release fittings provides attachment of a parachute assembly. A gated D-ring attached to the right hand shoulder adjustable strap is interwoven with the canopy release adapter, and attaches to the helicopter hoist hook during rescue. There are currently four different harnesses in use.

(1) PCU-17/P Crew Restraint Harness Assembly. The PCU-17/P integrates the Air Force PCU-17/P Personnel Restraint Harness and the Air Force HBU-6/P Safety Strap Assemblies, as the authorized Navy SAR-Loadmaster crew safety-restraint system. The PCU-17/P provides crew restraint when performing SAR kit and air drop duties from the P-3 Aircraft, and Loadmaster and air drop duties from the C-2 Aircraft, and may not be used in conjunction with any Navy Emergency Personnel Parachute Assemblies or Systems.

(2) PCU-26/P Personnel Parachute Torso Suit Harness Assembly. The PCU-26/P and the HBU-18/A Lap Belt Assembly are designed for Aircrew personnel to don in the aircraft. The PCU-26/P Torso Harness Assembly and HBU-18/A Lap Belt configuration are exclusively designed for use by the Blue Angels aboard the flight demonstration F/A-18 Aircraft, and may not be used with any other parachute assembly or aircraft system.

(3) PCU-33/P Series Parachute Restraint Harness Assembly. The PCU-33/P Series provides integration of the parachute harness, lap belt assembly, and the shoulder restraint harness. It provides mobility for Aircrew personnel while providing restraint in the seat and serves as a parachute harness in case of aircraft ejection or bailout. The PCU-33/P consists of nylon webbing encased in a nylon fabric channel and is configured into a sleeveless, legless, torso garment available in 16 stock sizes and custom-fit. A gated D-ring is interwoven with the canopy release adapter on the right shoulder strap to facilitate the rescue of downed Aircrew personnel. Webbing bands are incorporated at the waist area for attaching a life preserver in the event a survival vest is not used. The basic harness can be modified into seven different configurations through incorporation of various Aircrew Systems Changes to add different survival item pockets, eliminating the requirement for a survival vest. The PCU-33/P is utilized in all AV-8, C-2, E-2, EA-6B, S-3, T-2, TA-4, T-45, F-14, and F/A-18 aircraft. The PCU-33/P is being replaced through attrition by the PCU-56/P Series Harness.

(4) PCU-56/P Series Parachute Restraint Harness Assembly. The PCU-56/P Series was designed to replace the PCU-33/P Series through attrition, and incorporates many design changes to accommodate both male and female Aircrew personnel. Like the PCU-33/P, it consists of nylon webbing encased in a nylon fabric channel and is configured into a sleeveless, legless, torso garment. However, the PCU-56/P allows for a harness adapter assembly to be used in order to adjust the harness to a vast range of sizes, reducing the number of stock sizes from 17 to 3. It also incorporates two channels in the main sling for the routing of the chest strap, thus making it even more adjustable than a PCU-33/P Series Harness. An optional inner garment vest assembly is available to facilitate optimum fitting of the chest strap for female Aircrew personnel. These changes combined to reduce the number of requirements for custom-fit PCU-33/P Series Harnesses. However, a custom-fit PCU-

56/P is available to those Aircrew personnel who are unable to achieve a proper fit with available stock sizes. The basic harness can be modified into four different configurations through incorporation of various Aircrew Systems Changes to add different survival item pockets, eliminating the requirement for a survival vest. The PCU-56/P is utilized in all AV-8, C-2, E-2, EA-6B, S-3, T-2, TA-4, T-45, F-14, and F/A-18 aircraft.

u. Underwater Emergency Breathing Devices. There are currently two Underwater Emergency Breathing Devices in use, the SRU-36/P Helicopter Emergency Egress Device (HEED) and the SRU-40/P Series HABD. The SRU-40/P will replace the SRU-36/P through attrition.

(1) SRU-36/P Helicopter Emergency Egress Device. The SRU-36/P HEED is a compact, lightweight breathing apparatus used by helicopter, E-2, and C-2 Aircrew personnel during emergency ditching in water; it is also being evaluated for use in the MV-22. The device provides two to four minutes of breathing air depending on the depth under water, water temperature, and the individual using the device. The SRU-36/P HEED is composed of two major components; an aluminum cylinder and a demand-type, 2-stage regulator with attached mouthpiece. The cylinder has a capacity of 1.8 cubic feet of air at a rated pressure of 3,000 pounds per square inch (psi). The regulator is a simple demand type mounted directly into the cylinder. The regulator consists of a metallic inner main body encased in a plastic housing, exhaust disc, pressure indicator, and an on-off valve.

(2) SRU-40/P Series Helicopter Aircrew Breathing Device. The SRU-40/P Series HABD is a compact, lightweight breathing assembly with a rated cylinder pressure of 3,000 psi. The SRU-40/P, SRU-40A/P and SRU-40B/P are functionally and mechanically identical, and vary only in improved components. The SRU-40/P Series HABD is intended for use by helicopter, E-2, and C-2 Aircrew personnel during emergency ditching in water; it is also being evaluated for use in the MV-22. The device provides one to three minutes of breathing air depending upon the depth under water, water temperature, and the individual using the device. The SRU-40/P Series HABD is a two stage device that comes in one size only. It is a compact, self-contained breathing device consisting of a first stage regulator and a second stage regulator with a 20-inch hose connecting the two regulators.

The first stage regulator assembly consists of the first stage regulator subassembly, the pressure gage subassembly, and the cylinder. An indicator ring on the first stage displays on-off status and a safety burst disc in the safety disc subassembly prevents over pressurization. The cylinder has a capacity of 1.5 cubic feet of air at a rated pressure of 3,000 psi.

The second stage regulator consists of the mouthpiece subassembly and the box bottom, the plastic chamber, and other integral parts. It has two exhaust valves that are covered for protection from becoming unseated, and provide greater security of a negative pressure in the demand chamber. Because of the constant pressure between the two stages, breathing is relatively easy and water does not enter the mouthpiece or chamber.

v. Night Vision Imaging Systems. There are currently three different Night Vision Imaging Systems in use in Navy and Marine Corps aircraft, the MXU-810/U Cats-Eyes Night Vision System, the AN/AVS-6(V) Aviators Night Vision Imaging System (ANVIS), and the AN/AVS-9(V) NVIIS. The AN/AVS-9(V) NVIIS is a new upgrade that uses state-of-the-art light intensifying technology to incorporate substantial improvements in clarity of night vision imaging, resulting in near 20/20 vision. The system provides significant increases in all areas of performance and reliability over the MXU-810/U Cats-Eyes and older Omni II versions of the AN/AVS-6(V). The AN/AVS-9(V) is currently in the Production and Deployment acquisition phase, is being introduced to the fleet, and will replace the MXU-810/U Cats-Eyes Night Vision System and the AN/AVS-6(V) ANVIS through attrition. Refer to NTP A-50-9304/A for additional information on the MXU-810/U Cats-Eyes Night Vision System. Refer to NTP A-50-8214D/D for additional information on the AN/AVS-6(V) ANVIS. Refer to the Initial NTSP for additional information on the AN/AVS-9(V) Night Vision Image Intensifier Set.

2. Physical Description. Not Applicable (NA)

3. New Development Introduction. Various ALSS items have been introduced into the fleet over the past two decades as new production items. The following items are recent additions or will be added to the ALSS inventory in the near future.

a. Navy Combat Edge. The NCE is being introduced into the fleet through the Type Commanders (TYCOM), Commander Naval Air Force Atlantic Fleet (COMNAVAIRLANT), Commander Naval Air Force Pacific Fleet (COMNAVAIRPAC), Chief of Naval Training (CNATRA), and Commander Naval Reserve Force (COMNAVRESFOR) as new production items. Introduction began in November 1999.

b. TTU-551/E Leakage Tester. The TTU-551/E is manufactured by NAWCAD Lakehurst, and is planned for introduction into the fleet through the TYCOMs as an addition to the Individual Material Readiness List (IMRL). A total of fifty-six units were procured, manufactured, and are currently being introduced to the fleet. The use of ABO in organizational level Aircrew Survival Equipmentmen (PR) Work Centers (WC) aboard ship resulted in the re-evaluation of NCE special inspections requiring the use of the TTU-551. This action resulted in changing the inspection intervals to minimize or eliminate the need to conduct special inspections requiring the use of the TTU-551 while deployed. If required for scheduled and/or unscheduled maintenance while deployed, the TTU-551 would be used at the intermediate level Oxygen Shop (81C) aboard ship.

c. CWU-79/P Passenger Anti-Exposure Survival System. The CWU-79/P PAESS was introduced first in December 1995 (450 units) through an Engineering Change Proposal to modify a surplus stock of existing size-12 CWU-62A/P Anti-Exposure Suits. These suits were modified by various Aircraft Intermediate Maintenance Departments (AIMD).

d. CWU-83/P Passenger Anti-Exposure Coverall Ensemble. The CWU-83/P PAEC is being introduced into the fleet through the TYCOMs as new production items. Introduction began in January 2001.

d. A/P22P-7 (V) Quick Donning Flyer's Anti-Exposure Apparel Assembly CWU-60/P. The CWU-60/P replaced the QD-1.

e. AN/URT-140 Radio Beacon Set. The AN/URT-140 Radio Beacon Set will replace approximately 8,000 AN/URT-33A and AN/PRT-5 systems. The initial delivery of 80 units was completed in September 2000. The remaining units will be delivered through a series of three more lots scheduled for delivery completion by June 2002. The distribution plan is for production assets to be divided between and introduced by the Fleet TYCOMs.

f. AN/PRC-149 Radio Set. The AN/PRC-149 Radio Set will replace approximately 11,000 AN/PRC-90-2, AN/PRC-112 and AN/PRC-125 systems. The initial delivery of 400 units was completed in November 2000. The remaining units will be delivered through a series of three more lots scheduled for delivery completion by September 2002. The distribution plan is for production assets to be divided between and introduced by the Fleet TYCOMs (40% each for COMNAVAIRLANT and COMNAVAIRPAC, and 10% each for COMNAVRESFOR and CNATRA).

The initial delivery of 200 C-12631/PRC-149 Swimmer's Control Units was completed in March 2001 with 104 units. The remaining units were delivered through a series of two more lots and completed in August 2001. Production assets were divided between and introduced by the Fleet TYCOMs (40% each for COMNAVAIRLANT and COMNAVAIRPAC, and 20% for COMNAVRESFOR). No assets are currently planned for delivery to CNATRA.

g. AN/PRC-112 Radio Set. The initial delivery of 3,726 AN/PRC-112 Radio Sets has been completed. The Naval Inventory Control Point (NAVICP) procures the radio through the Army.

h. Joint Advanced Laser Eye Protection Visor. The JALEPV is currently in the System Development and Demonstration acquisition phase, with Milestone C scheduled for January 2002. JALEPV is scheduled for introduction into the fleet through the Fleet TYCOMs and issued upon deployment of the receiving squadron.

i. LPU-32/P Life Preserver Assembly. The LPU-32/P will replace the LPU-30/P and LPP-1/1A through attrition. The initial contract of 9,000 units has been completed. The LPU-32/P was introduced to the fleet as a new production item in Fiscal Year FY (99).

j. LPU-33/P Low Profile Flotation Collar. The LPU-33/P LPFC was originally intended to replace the LPU-23/P through attrition. The initial contract of 12,000 units was awarded in July 1996. Configuration problems have resulted in dramatic changes to this program. Existing LPU-33/P Collars have been forwarded to Aviation Survival Training Centers (ASTC) to be used as LPU-34/P Training Aids. LPU-33/P Life Preservers that were at the manufacturer's bond room have been converted into LPU-34/P Life Preservers. Remaining LPU-33/P assets will be deleted from inventory as LPU-36/P Life Preservers are placed into service.

k. LPU-34/P Low Profile Flotation Collar. The LPU-34/P LPFC will replace the LPU-21/P through attrition. The initial contract of 12,000 units was awarded in July 1996. The distribution plan is for production assets to be divided evenly between and introduced by the Fleet TYCOMs.

l. LPU-36/P Low Profile Flotation Collar. The LPU-36/P LPFC will replace the LPU-33/P through forced retrofit by direction of the Fleet TYCOMs. The initial contract of 5,500 units was awarded under a modification to the existing LPU-33/P contract, with 450-550 units being delivered each month for a period of 11 months. The distribution plan is for production assets to be divided evenly between and introduced by the Fleet TYCOMs.

m. FLU-8B/P Automatic Inflation Device. The initial delivery of the FLU-8B/P Automatic Inflation Device has been completed. Continued delivery is through normal supply channels.

n. A/P22P-21 Crew Backpack Assembly. This item has been procured by the TYCOMs and is currently an issue as needed item.

o. PCU-56/P Torso Harness. The initial delivery of the PCU-56/P Torso Harness has been completed. Continued delivery is through normal supply channels.

p. SRU-40/P Helicopter Aircrew Breathing Device. The SRU-40/P Series HABD will replace approximately 8,000 SRU-36/P HEEDs through attrition.

q. Multi-Place Life Raft. The MPLR began fleet introduction as a new production item in FY00. Attrition is projected to occur over a ten-year period, with final deliveries in FY10.

4. Significant Interfaces. Most ALSS provides the necessary interfaces between personnel and the aircraft as well as the environment under several scenarios as depicted in the functional descriptions above.

5. New Features, Configurations, or Material. NA

H. CONCEPTS

1. Operational Concept. ALSS consists of specialized clothing and equipment that provide Aircrew members with a physiologically safe environment, a means of escaping a disabled aircraft, and the capability to survive and interface with rescuers after escape.

2. Maintenance Concept. The Naval Aviation Maintenance Program (NAMP), Office of the Chief of Naval Operations Instruction (OPNAVINST) 4790.2G, provides general direction and guidance regarding the maintenance of ALSS. The Aviation Crew Systems Manual, NAVAIR 13-1-6.1-1 through NAVAIR 13-1-6.10, provides specific guidance and technical information related to the configuration, application, function, inspection, and repair of Aircrew

safety and survival equipment. The information contained in each volume is intended for organizational, intermediate, and depot levels of maintenance as prescribed by the NAMP.

The maintenance concept for ALSS is based on preventive and corrective maintenance including inspections, fittings, adjustments, repair, rework, and replacement of malfunctioning parts or clothing items while maximizing the use of the lowest level of maintenance.

The maintenance concept for the MPLR is based on preventive maintenance including inspections and replacement of expired survival items at the organizational level. Intermediate maintenance is limited to Place-In-Service inspections on new acquisitions only. All corrective maintenance and five-year recertification will be accomplished by contractor supported depot level maintenance.

a. Organizational. Organizational level maintenance of ALSS consists of preventive and corrective maintenance actions performed at the squadron level. Navy PR and Marine Corps Flight Equipment Marines, Military Occupational Specialty (MOS) 6048, maintain the flight equipment including clothing, masks, helmets, regulators, flotation devices, survival equipment, and parachutes in WC 13A, Aircrew Personal Protective Survival Equipment Shop. AME and Marine Corps Aircraft Safety Equipment Mechanic personnel with the appropriate aircraft NEC or MOS maintain the ejection seats and oxygen systems in WC 13B, Egress and Environmental Systems Shop.

(1) Preventive Maintenance. Preventive Maintenance (PM) of all ALSS is conducted at specific intervals in accordance with established procedures depicted in the Maintenance Requirements Cards (MRC) for each specific type of equipment. PM may consist of any of the following actions: inspections, adjustments, functional tests, scheduled removal and replacement, and lubrication as prescribed in the MRCs.

(2) Corrective Maintenance. Corrective Maintenance of ALSS may consist of any of the following actions depending on the specific requirements to maintain the equipment: system testing, fault isolation, removal and repair or replacement of defective parts, and inspections. When appropriate, faulty Weapon Replaceable Assemblies are forwarded to the intermediate level for repair.

b. Intermediate. Intermediate level maintenance of ALSS is performed at Navy AIMDs by PR personnel and at Marine Aviation Logistics Squadrons by Marine Corps personnel, MOS 6048. In WC 800, Aviators' Life Support Systems Division, maintenance actions include functional tests and adjustments, fault isolation, and the removal and replacement of high-time and defective parts. Shore station AIMD facilities also provide organizational level support for Naval Air Facility (NAF) and NAS Operational Maintenance Department (OMD) personnel and transient Aircrew personnel.

Emergency radios are tested and inspected by Navy Aviation Electronics Technicians (AT), NEC 6611, and Marine Corps Aircraft Communication Systems Technician, MOS 6412, in WC 610, Communications and Navigation Branch.

Refer to the NAOS NTSP N-78-A-50-8603C/D for information regarding tests, inspections, and repair of various oxygen systems, regulators, and test stands.

c. Depot. Depot level maintenance of specific ALSS equipment is performed at Naval Aviation Depots (NADEP) or contractor depot repair activities. Most ALSS does not require depot level maintenance. However, maintenance actions at this level consist of repairs, adjustments, calibration, and inspections. Naval Surface Warfare Center Indian Head, Maryland, is responsible for all cartridges, Cartridge Actuated Devices (CAD), and Aircrew Escape Propulsion System (AEPS) devices employed by ejection seat systems that are reworkable. Ejection seats undergo depot level rework concurrently with the aircraft's Standard Depot Level Maintenance (SDLM) cycle.

SPECIFIC ALSS MAINTENANCE RESPONSIBILITIES							
MAJOR ALSS GROUP	ORGANIZATIONAL			INTERMEDIATE			DEPOT
	SKILL	MOS	WC	SKILL	MOS	WC	
Anti-Exposure Clothes	PR	6048	13A	PR 0000	6048	81A	NA
* Anti-G Garments	PR	6048	13A	PR 0000	6048	81A	NA
* Aviator's Clothing	PR	6048	13A	PR 0000	6048	81A	NA
* Breathing Masks	PR	6048	13A	PR 0000	6048	81A	NA
CBR Protective Clothes	PR	6048	13A	PR 0000	6048	81A	NA
+ Ejection Seats	AME	6282 6283 6286 6287	13B	AME 8332	6283	81D	Designated NADEP or Contractor Maintenance
Emergency Radios	PR	6048	13A	AT 6611	6412	610	Designated NADEP
* Helmets	PR	6048	13A	PR 0000	6048	81A	NA
* JALEPV	PR	6048	13A	PR 0000	6048	81A	NA
Life Rafts	PR	6048	13A	PR 0000	6048	81B	NA
MPLR	PR	6048	13A	PR 0000	6048	81B	Contractor Maintenance
NCE	PR	6048	13A	PR 0000	6048	81A	NA
Parachutes	PR	6048	13A	PR 0000	6048	81A	NA
A/P22P-21 Crew Backpack Assembly	PR	6048	13A	PR 0000	6048	81A	Contractor Maintenance

SPECIFIC ALSS MAINTENANCE RESPONSIBILITIES							
MAJOR ALSS GROUP	ORGANIZATIONAL			INTERMEDIATE			DEPOT
	SKILL	MOS	WC	SKILL	MOS	WC	
Life Preservers	PR	6048	13A	PR 0000	6048	81B	NA
Rescue Equipment	PR	6048	13A	PR 0000	6048	81A	NA
SAR Swimmers Personal Equipment	PR	6048	13A	PR 0000	6048	81A	NA
Seat Survival Kits	PR	6048	13A	PR 7356	6048	81B/ 81C	NA
Survival Vests	PR	6048	13A	PR 0000	6048	81A	NA
Torso Harnesses	PR	6048	13A	PR 0000	6048	81A	NA

* **Note:** Station AIMDs provide organizational level support on these items for NAF/NAS/OMD personnel and transient aircrew personnel.

+ **Note:** Ejection seat intermediate level maintenance is performed only at NAS Whidbey Island, Washington.

d. Interim Maintenance. NA

e. Life Cycle Maintenance Plan. The MPLR and A/P22P-21 Crew Backpack Assembly are the only components of ALSS other than ejection seats incorporating a life cycle maintenance plan. The organizational level will remove and forward the MPLR and the A/P22P-21 Crew Backpack Assembly to the contractor once every five years for recertification. Ejection seats undergo depot level rework concurrently with the aircraft's SDLM cycle.

3. Manning Concept. No changes are necessary to current manpower requirements. ALSS operators are the Aircrew members who wear the protective clothing and equipment and use the aircraft installed systems. Navy PR personnel and Marine Corps Flight Equipment Marines, MOS 6048, perform organizational and intermediate level maintenance on most ALSS. AME personnel and Marine Corps Aircraft Safety Equipment Mechanics (MOSs 6282, 6283, 6286, and 6287) perform organizational level maintenance on ejection seats installed on specific aircraft. Organizational and intermediate maintenance manpower is driven by the overall maintenance requirements at each activity and not by any particular ALSS item.

4. Training Concept. Initial operator and maintenance training for all ALSS currently employed has been completed. Initial training for new ALSS will either be conducted by the manufacturer or contractor or by Navy personnel who will provide on-site indoctrination training to Aircrew and maintenance personnel. Follow-on ALSS operator training is conducted as part

of general and aircraft-specific aircrew training via aviation physiology, aviation water survival, and Fleet Readiness Squadron (FRS) training.

The established training concept for most aviation maintenance training divides “A” School courses into two or more segments called *Core* and *Strand*. Many organizational level “C” School courses are also divided into separate *Initial* and *Career* training courses. “A” School *Core* courses include general knowledge and skills training for the particular rating, while “A” School *Strand* courses focus on the more specialized training requirements for that rating and a specific aircraft or equipment, based on the student’s fleet activity destination. *Strand* training immediately follows *Core* training and is part of the “A” School.

ALSS organizational and intermediate level maintenance training for PR and MOS 6048 personnel is established at PR Class A1 and intermediate level C1 schools. Marine Corps students are enrolled in both Core and Strand training as provided by the A1 course at this time.

The decision was made at the April 2000 Maintenance Training Requirements Review conference to eliminate the Core and Strand training track concept in the PR Class A1 school, combining C-602-2037 into C-602-2035 and eliminating the C-602-2037 Strand as a separate course. C-602-2035 was also extended by ten days to include flight clothing fitting procedures, newly procured systems, and deleting obsolete equipment. Additionally, a proposal was accepted to divide the Survival Equipment phase of the course into two units, and include night vision systems, CBR equipment, and a practical laboratory exercise.

a. Initial Training. When new ALSS is being introduced into the fleet, two basic methods of initial training may be employed. One method is for the contractor or manufacturer to provide initial training to instructor and fleet cadre personnel. This method of initial training was used for OBOGS and NACES, whose training was completed in FY91 and FY93, respectively.

The primary method of providing ALSS initial training is for the Fleet Air Introduction Liaison Survival Aircrew Flight Equipment (FAILSAFE) Team to visit each site, including other training activities, providing indoctrination training to Aircrew and maintenance personnel. These FAILSAFE Teams receive their training either from the manufacturer or the developing activity.

The FAILSAFE Team for the NCE will receive their training from NAWCAD Patuxent River; however, a schedule has not yet been determined. As the NCE is introduced into the fleet, PR personnel and Marine Corps MOS 6048 personnel will receive on-site maintenance training from FAILSAFE Teams.

Initial training for the PCU-56/P Torso Harness is being provided on-site by the Naval Air Warfare Center, Weapons Division (NAWCWD) China Lake, instead of through FAILSAFE.

Due to their similarity to other ALSS, the Replacement Helicopter Helmet, PAESS, and AN/PRC-112 Survival Beacon do not require initial training.

b. Follow-On Training. ALSS follow-on training is provided to fleet personnel through On-the-Job Training conducted on-site by unit personnel.

(1) Operator Training. ALSS operator training is an integral part of all Aircrew training courses. Aircrew members receive training through the Naval Aviation Survival Training Program (NASTP) and the appropriate FRS.

(a) Naval Aviation Survival Training Program. The ASTCs conduct several aviation physiology training courses to meet the various needs of the fleet through the NASTP. Each physiology training course provides some aspect of ALSS training as needed. This includes the proper ways of wearing, adjusting, and using the numerous garments, helmets, and masks; use of emergency and rescue equipment such as survival vests, radios, rafts, and parachutes; and procedures for employing an ejection seat. Refer to the NASTP NTSP N78-NTSP-A-50-9803/D for information on specific ALSS training courses that are provided by the ASTCs.

(b) Fleet Readiness Squadron. The FRSs conduct aircraft-specific training for Aircrews, including proper fit and use of the appropriate anti-G garment, oxygen system, and ejection envelope training as identified in the NATOPS manual for the aircraft. Refer to the applicable aircraft NTSP for specific course information on Aircrew training conducted at FRSs.

(2) Maintenance Training

(a) Organizational and Intermediate Maintenance Training for Aircrew Survival Equipmentman and Military Occupational Specialty 6048 Personnel. The majority of ALSS organizational and intermediate maintenance training for PR and MOS 6048 personnel is currently provided in course *C-602-2035, Aircrew Survival Equipmentman Class A1*. The Class C-1 courses cover specific intermediate maintenance training requirements, and are not utilized for organizational maintenance training. Detailed information regarding course *C-602-2028, Aircrew Survival Equipment Intermediate Maintenance Pipeline* can be found in the NAOS NTSP listed in paragraph M.

Course *C-602-2029, Advanced Sewing Machine Repair* will remain a stand-alone course. Information concerning this course is depicted below.

Title	Advanced Sewing Machine Repair
CIN	C-602-2029
Model Manager...	Naval Air Technical Training Center (NATTC) Pensacola
Description.....	This course provides the Navy or Marine Corps Aircrew Survival Equipmentman the skills necessary to perform and supervise the maintenance and repair of sewing machines in the Naval inventory at the intermediate level of maintenance. The course is group-paced instruction. All students receive the technical knowledge and skill training necessary to operate, maintain, and repair sewing machines. Training is in-depth and technical, and covers all aspects of operation to timing repair and complete overhaul.
Location	NATTC Pensacola
Length.....	19 days
RFT date	Currently available
Skill identifier	None
TTE/TD	As listed in element IV.A.1
Prerequisite	° C-602-2035, Aircrew Survival Equipmentman, Common Core Class A1 ° Paygrade E-5 or career designated E-4

c. Student Profiles

(1) Organizational Level Maintenance Training for Aviation Structural Mechanic, Safety Equipment Personnel, 83XX, and Aircraft Safety Equipment Mechanics, Military Occupational Specialties 6282, 6283, 6286, and 6287. ALSS organizational level maintenance training for AME and MOSs 6282, 6283, 6286, and 6287 personnel is conducted for specific aircraft. These courses include training on the ejection seat and oxygen system for the particular aircraft, including OBOGS. For current organizational maintenance course information for AMEs and Marines, as well as annual training input requirements, refer to the corresponding aircraft NTSP as listed in paragraph M.

(2) Training for Aircrew Survival Equipmentman Personnel, and Aircraft Safety Equipment Mechanics, Military Occupational Specialties 6048. Intermediate level maintenance training on the NACES was Ready For Training (RFT) in July 1996 for PRs at Naval Air Maintenance Training Group Detachment Maintenance Training Unit (MTU)s 1038, NAS Lemoore, California, and MTU 1039, NAS Oceana, Virginia. Refer to the NACES NTSP for additional information including annual training input requirements.

d. Training Pipelines. Detailed information regarding the *C-602-2028, Aircrew Survival Equipment Intermediate Maintenance* pipeline can be found in the NAOS NTSP listed in paragraph M. Organizational and intermediate maintenance courses for the NACES are detailed in a separate NTSP as listed in paragraph M. Both the NAOS and NACES NTSPs address the training track to be established for the intermediate level courses on these two systems.

The Advanced Sewing Machine Repair course is a stand-alone Class F1 course and is not associated with any other pipeline courses or tracks.

(1) Explosive Ordnance Disposal Training. Explosive Ordnance Disposal (EOD) training courses A-431-0011 and A-431-0012 include general training in recognition, safety procedures, disarming, and removal of CADs and AEPS devices. EOD personnel will respond in cases of crash, fire, and partial or full ejection involving an aircraft equipped with an ejection seat.

(2) Selected Reserve Training. NATTC Pensacola has not programmed Selected Reserves personnel for PR or ALSS training at this time.

I. ONBOARD (IN-SERVICE) TRAINING

1. Proficiency or Other Training Organic to New Development

a. Maintenance Training Improvement Program. Current planning is to adopt the Aviation Maintenance Training Continuum System (AMTCS) concepts to replace Maintenance Training Improvement Program (MTIP). AMTCS is scheduled to begin full implementation for fleet deployment in FY02.

b. Aviation Maintenance Training Continuum System. AMTCS will provide career path training to the Sailor or Marine from their initial service entry to the end of their military career. AMTCS concepts will provide an integrated system that will satisfy the training and administrative requirements of both the individual and the organization. The benefits will be manifested in the increased effectiveness of the technicians and the increased efficiencies of the management of the training business process. Where appropriate, capitalizing on technological advances and integrating systems and processes can provide the right amount of training at the right time, thus meeting the Chief of Naval Operation's (CNO) mandated "just-in-time" training approach.

Technology investments enable the development of several state-of-the-art training and administrative tools: Interactive Multimedia Instruction (IMI) for the technicians in the Fleet in the form of Interactive Courseware (ICW) with Computer Managed Instruction (CMI) and Computer Aided Instruction (CAI) for the schoolhouse.

Included in the AMTCS development effort is the Aviation Maintenance Training Continuum System - Software Module, which provides testing [Test and Evaluation], recording [Electronic Certification Qualification Records], and a Feedback system. The core functionality of these AMTCS tools are based and designed around the actual maintenance-related tasks the technicians perform, and the tasks are stored and maintained in a Master Task List data bank. These tools are procured and fielded with appropriate Commercial-Off-The-Shelf (COTS) hardware and software, i.e., Fleet Training Devices - Laptops, PCs, Electronic Classrooms, Learning Resource Centers (LRC), operating software, and network software and hardware.

Upon receipt of direction from OPNAV (N789H), AMTCS concepts are to be implemented and the new tools integrated into the daily training environment of all participating, aviation activities and supporting elements. AMTCS will serve as the standard training system for aviation maintenance training within the Navy and Marine Corps, and is planned to supersede the existing MTIP and Maintenance Training Management and Evaluation Program (MATMEP) programs.

2. Personnel Qualification Standards. Personnel Qualification Standards is no longer applicable to ALSS and has been discontinued.

3. Other Onboard or In-Service Training Packages. Marine Corps onboard training is based on the current series of MCO P4790.12, Individual Training Standards System and MATMEP. This program is designed to meet Marine Corps, as well as Navy OPNAVINST 4790.2 series, maintenance training requirements. It is a performance-based, standardized, level-progressive, documentable, training management and evaluation program. It identifies and prioritizes task inventories by MOS through a front-end analysis process that identifies task, skill, and knowledge requirements of each MOS. MTIP questions coupled to MATMEP tasks will help identify training deficiencies that can be enhanced with refresher training. (MATMEP is planned to be replaced by AMTCS.)

J. LOGISTICS SUPPORT. Due to the volume of items addressed in this NTSP, it would be impractical to provide the logistics requirements for each specific item. Since most of the ALSS has been in service for a considerable number of years, many of the items now have more than one manufacturer. Integrated Logistic Support Plans (ILSP) and Acquisition Logistic Support Plans (ALSP) are not required for all ALSS. The Aircrew Systems Program Office, PMA202 maintains ILSPs and ALSPs for those items of ALSS that require one. Technical manuals for ALSS are under the cognizance of the Naval Air Technical Data and Engineering Service Command (NATEC). Additional information may be obtained from PMA202. Logistics information is listed below for recent ALSS additions. Specific logistics information on new ALSS will be addressed in updates to this NTSP as they are developed.

1. Manufacturer and Contract Numbers. Below is a list of the contract numbers, contractor names, and addresses for the manufacturers of new development ALSS.

NOMENCLATURE	CONTRACT NUMBER	MANUFACTURER	ADDRESS
NCE - Regulator	N62269-93-C-0206	Carleton Technology	10 Cobhan Drive Orchard Park, NY 14217-4159
NCE - All other components	N62269-93-C-0206	Gentex Corporation	P.O. Box 315 Carbondale, PA 18407
TTU-551/E Leakage Tester	NA	NAWCAD Lakehurst	Highway 547 Lakehurst, NJ 08733- 5108
A/P22P-14(V) Respirator Assembly	N00019-97-C-0034	Cam Lock (UK) LTD	Unit 10, Springlakes Industrial Estate Aldershot, Hants- GU124UH, England
AN/PRC-112 Radio Set	F33657-83-C-0122- 00014	Motorola, Inc. Government and Systems Technology	8201 E. McDowell Road P.O. Box 1417 Scottsdale, AZ 85252- 1417
AN/URT-140 Radio Beacon Set	N00019-98-C-0137	Tadiran Spectralink Ltd.	29 Hamerkava St. P.O. Box 150 Holon 58101, Israel
AN/PRC-149 Radio Set	N00019-98-C-0137	Tadiran Spectralink Ltd.	29 Hamerkava St. P.O. Box 150 Holon 58101, Israel
HGU-84/P Replacement Helicopter Helmet	N62269-92-C-0205	Gentex Corporation	P.O. Box 315 Carbondale, PA 18407
JALEPV	N00421-01-R-0134	Holographic Optics, Inc.	358 Sawmill River Road Millwood, NY 10546

NOMENCLATURE	CONTRACT NUMBER	MANUFACTURER	ADDRESS
LPU-32/P	N00383-97-C-04P for first 1687 units N00383-97-D-037P	Switlik Parachute Co.	1325 East State Street Trenton, NJ 08609
LPU-33/P	N68936-96-D-0300	Safety Equipment, Inc.	537 Sweeten Creek Industrial Park Ashville, NC 28803
LPU-34/P	N68936-96-D-0300	Safety Equipment, Inc.	537 Sweeten Creek Industrial Park Ashville, NC 28803
LPU-36/P	N68936-96-D-0300	Safety Equipment, Inc.	537 Sweeten Creek Industrial Park Ashville, NC 28803
MPLR	Government Services Administration (GSA) purchase	Air Cruisers Company	P.O. Box 180 Highway 34 South and Allaire Airport Belmar, NJ 07719-1080
A/P22P-21 Crew Backpack Assembly	N68936-00-G-0001	Safety Equipment Inc.	537 Sweeten Creek Industrial Park Asheville, NC 28803
SRU-40/P Helicopter Aircrew Breathing Device	COTS	U.S. Divers Inc.	2340 Cousteau Court Vista, CA 92083

2. Program Documentation

a. Navy Combat Edge. The ILSP for the NCE, AS-ILSP-425, was developed by NAWCAD Warminster, in August 1994, and updated in September 1995. Technical information on individual components of NCE is contained in NAVAIR 13-1-6.7-2.

b. TTU-551/E Leakage Tester. The User's Logistics Support Summary (ULSS) for the TTU-551/E, NAWCADLKE-U70098031, was approved in August 1999. Technical information on the TTU-551/E is contained in NAVAIR 17-15GB-505.

c. CWU-79/P Passenger Anti-Exposure Survival Suit. The ILSP for the CWU-79/P, AS-ILSP-423, was approved in August 1994. Technical information on the CWU-79/P is contained in NAVAIR 13-1-6.7-2.

d. A/P22P-7(V) Quick Donning Flyer's Anti-Exposure Apparel Assembly CWU-60/P. Technical information on the A/P22P-7(V) is contained in NAVAIR 13-1-6.7-2.

e. A/P22P-14(V) Helicopter Aircrew CBR Protective Clothing. Technical information on the A/P22P-14(V) is contained in NAVAIR 13-1-6.10.

f. AN/PRC-112 Survival Beacon. An Army ILSP is available for the AN/PRC-112, numbered 3673-4007-03, 18 December 1987. Additional technical information on the AN/PRC-112 is contained in NAVAIR 13-1-6.5 and NAVAIR 16-30PRC112-2.

g. AN/URT-140 Radio Beacon Set. An ILSP was not developed for this program. Additional technical information on the AN/URT-140 is contained in NAVAIR 16-30URT140-1.

h. AN/PRC-149 Radio. An ILSP was not developed for this program. Additional technical information on the AN/PRC-149 is contained in NAVAIR 16-30PRC149-1.

i. Joint Advanced Laser Eye Protective Visor. The ILSP for the JALEPV was approved in June 2001. This ILSP does not have a number assigned. Technical information on the JALEPV will be contained in NAVAIR 13-1-6.7-3.

j. MBU-23(V)/P Enhanced Pressure-Demand Oxygen Mask. Technical information on the MBU-23(V)/P is contained in NAVAIR 13-1-6.7-3.

k. FLU-8B/P Automatic Inflation Device. Technical information on the FLU-8B/P is contained in NAVAIR 13-1-6.1.

l. LPU-32/P Life Preserver Assembly. Technical information on the LPU-32/P is contained in NAVAIR 13-1-6.1-2.

m. LPU-33/P Low Profile Flotation Collar. Technical information on the LPU-33/P is contained in NAVAIR 13-1-6.1-2.

n. LPU-34/P Low Profile Flotation Collar. Technical information on the LPU-34/P is contained in NAVAIR 13-1-6.1-2.

o. LPU-36/P Low Profile Flotation Collar. Technical information on the LPU-36/P is contained in NAVAIR 13-1-6.1-2.

p. A/P22P-21 Crew Backpack Assembly. The ALSP for the A/P22P-21, AC-ALSP-0101 REVA was approved in March 2001. Technical information on this assembly is contained in NAVAIR 13-1-6.2.

q. SRU-40/P Helicopter Aircrew Breathing Device. Technical information on the SRU-40/P is contained in NAVAIR 13-1-6.5.

r. PCU-56/P Torso Harness. An ILSP was not written for this configuration. Technical information on the PCU-56/P is contained in NAVAIR 13-1-6.2.

s. Multi-Place Life Rafts. An ILSP was not written for the MPLR. Technical information on the MPLR Assemblies is contained in NAVAIR 13-1-6.1-1.

3. Technical Data Plan. NATEC maintains, updates, and publishes the Aviation Crew Systems Manual, NAVAIR 13-1-6 (series), NATOPS manuals, and aircraft maintenance manuals. These manuals are available to fleet units online via the World Wide Web through NATEC's web site at <http://www.natec.navy.mil/> and via the NAVAIRSYSCOM (PMA202) web site at <http://pma202.navair.navy.mil/>. Interim Rapid Action Changes (IRAC) will continue to be distributed by naval message. IRACS for ALSS manuals will also be posted on both the NATEC web site and the NAVAIRSYSCOM (PMA202) web site.

Since not all activities have reliable access to the internet, the Aviation Crew Systems Manual series and the NAVAIR Allowance Listing (NA 00-35-QH-2) will be made available for continued limited distribution via CD-ROM. While the CD-ROM will be updated quarterly, the most current manual editions will be found on the web. There are no plans to resume automatic distribution of paper copies of updates to the ALSS manuals. Other NAVAIR manuals may be distributed automatically as paper copy depending upon both individual technical manual plans and available printing funds.

4. Test Sets, Tools, and Test Equipment. Existing support equipment will be used to support new ALSS with the exception of NCE. The TTU-551/E Leakage Tester was developed to perform critical leakage tests on the CSU-21/P22P-16 Counter Pressure Vest and the HGU-87/P22P-16 and HGU-89/P22P-16 Helmet Assemblies. Special equipment or tools peculiar to the support of NCE components are initially provided with the TTU-551/E Leakage Tester, including a gaseous oxygen pressure regulator with gages. Replacement components are available through NAWCAD Lakehurst, Code 482400B562-3. The use of gaseous oxygen in shipboard organizational level PR work centers is an issue that requires resolution.

5. Repair Parts. All ALSS currently employed in the fleet have been established in the supply system. Unless otherwise stated, all ALSS have achieved their Material Support Dates (MSD). The MSDs are listed by specific type of ALSS gear under Installation and Delivery Schedules in paragraph K.1.a. The NAVICP, Mechanicsburg, Pennsylvania, has been designated as the Primary Inventory Control Point for Navy assets. All components of the SAR swimmer's personal equipment are procured from commercial sources.

6. Human Systems Integration. NA

K. SCHEDULES

1. Schedule of Events. As new ALSS items are developed, schedule information will be available from the Aircrew Systems Program Office, PMA202, and will be included in future updates to this NTSP. Refer to the NACES and OEAS NTSPs for their respective delivery or installation schedule.

a. Installation and Delivery Schedules. The schedules are as follows:

(1) Navy Combat Edge. There will be no deliveries scheduled for squadron employment. The NCE is being purchased through a supply system contract. NAVICP will make the NCE available to squadrons through normal supply channels. Initial Operational Capability (IOC) was achieved in September 1999, and MSD was achieved in September 2000.

(2) TTU-551/E Leakage Tester. NAWCAD Lakehurst manufactures the TTU-551/E Test Set. A total of fifty-six units were procured and manufactured, and are ready for delivery to the fleet. IOC was achieved in September 1999, and MSD was achieved in September 2000.

(3) CWU-79/P Passenger Anti-Exposure Survival Suit. There were two sources providing PAESS to the fleet. Four hundred fifty ensembles were fabricated in accordance with ACC 613 by selected fleet activities and designated CWU-79/P1. One thousand size 12 CWU-62/P Series Coveralls were modified to CWU-79/P configuration by commercial contract N00383-98-C-003P. No more coveralls will be procured. MSD was achieved in February 1999.

(4) A/P22P-7 (V) Quick Donning Flyer's Anti-Exposure Apparel Assembly CWU-60/P. Contract N00383-97-D-003P is a four-year contract that was completed in 2000.

(5) A/P22P-14 (V) Helicopter Aircrew Chemical Biological Radiological Protective Clothing. The current contract for the newest CBR-NDI acquisition is N00019-97-C-0034 and was awarded on March 13, 1997.

(6) AN/PRC-112 Survival Beacon. The initial delivery of the AN/PRC-112 Survival Beacon has been completed. The AN/PRC-112 is procured from the Army by the NAVICP. IOC was achieved in FY88. Motorola, Inc. has completed conversion of 500 AN/PRC-112 Radios to AN/PRC-112B Radios. Parts support for 4,000 AN/PRC-112B units has been established, and MSD was achieved in October 1999. The AN/PRC-149 began replacing the AN/PRC-112 in FY01 through attrition.

(7) AN/URT 140 Radio Beacon Set. The contract is N00019-98-C-0137 and was awarded on June 5, 1998. The current program objective is 8,000 units. IOC was achieved in November 2001.

(8) AN/PRC 149 Radio Set. The contract is N00019-98-C-0137 and was awarded on June 5, 1998. The initial delivery of 400 units was completed in November 2000. The remaining units will be delivered through a series of three more lots scheduled for delivery completion by September 2002. The initial delivery of 200 C-12631/PRC-149 Swimmer's Control Units was completed in January 2001. The remaining units were delivered through a series of two more lots completed in May 2001. The current program objective is 9,900 AN/PRC-149 units and 800 C-12631/PRC-149 Swimmer's Control Units. Achievement of Full Operational Capability is anticipated for April 2003. MSD was achieved in October 2000.

(9) Joint Advanced Laser Eye Protective Visor. The JALEPV delivery schedule is currently being developed. IOC, originally scheduled for August 2002, has been postponed to a date yet To Be Determined (TBD). MSD is also TBD.

(10) FLU-8B/P Automatic Inflation Device. Information is not currently available.

(11) LPU-32/P Life Preserver Assembly. Nine thousand LPU-32/P Life Preserver Assemblies were procured under contracts N00383-97-C-04P for the first 1,687 units and N00383-97-D-037P for the remainder, and delivery was completed in August 1999. IOC was achieved in April 1999. MSD was achieved in August 1996.

(12) LPU-33/P Low Profile Flotation Collar. Twelve thousand LPU-33/P LPFCs were procured under contract N68936-96-D-0300. IOC was achieved in August 1998. MSD was achieved in January 2000.

(13) LPU-34/P Low Profile Flotation Collar. Twelve thousand LPU-34/P LPFCs were procured under contract N68936-96-D-0300. IOC was achieved in February 1998. MSD was achieved in January 2000.

(14) LPU-36/P Low Profile Flotation Collar. Five thousand five hundred LPU-36/P LPFCs were procured under contract N68936-96-D-0300. IOC was achieved in October 2000. MSD is anticipated for June 2002.

(15) A/P22P-21 Crew Backpack Assembly. Delivery for the A/P22P-21 is currently scheduled for October 2001. IOC was achieved in December 2000. MSD is anticipated for March 2002.

(16) SRU-40/P Series Helicopter Aircrew Breathing Device. Four thousand five hundred SRU-40/P Series HABDs were procured under contract N62269-95-C-0190. An additional 1,500 units were procured under contract N00421-97-C-1145. The last procurement was for 2,017 units under contract N00421-99-C-1225, delivering 500 units each on September 30 and October 30, 1999; and final delivery of 1,017 units was made on November 30, 1999. IOC was achieved in March 1998. MSD was achieved in December 1999.

(17) PCU-56/P Torso Harness. Initial contract delivery is complete. Currently, there are no active contracts for the PCU-56/P Torso Harness. Negotiations are underway for delivery of a total of 2,781 small, medium, and large harnesses. Continued delivery is through normal supply channels. IOC was achieved in February 1996 for the small model, and February 1997 for the medium and large models. MSD was achieved in February 1996 for the small model and in February 1997 for the medium and large models.

(18) Multi-Place Life Rafts. MPLRs are being procured through the GSA, and therefore MSD is not applicable. IOC was achieved in August 2000.

b. Ready For Operational Use Schedule. All ALSS is ready for operational use upon delivery or completion of installation, as appropriate.

c. Time Required to Install at Operational Sites. NA

d. Foreign Military Sales and Other Source Delivery Schedule. Schedule information concerning FMS and other procurements may be obtained by contacting PMA202.

e. Training Device and Technical Training Equipment Delivery Schedule. ALSS is used as Technical Training Equipment (TTE), both directly and indirectly, at ASTCs and FRs in all aspects of Aircrew training. NATTC Pensacola employs ALSS as TTE in PR and MOS 6048 training courses. At MTUs and Fleet Replacement Enlisted Skills Training Departments, ALSS is used to train AME personnel, NEC 83XX (series), and Aircraft Safety Equipment Mechanics, MOS 6287. As new ALSS enters fleet service, these systems will be delivered to the appropriate training activities for use as TTE.

L. GOVERNMENT FURNISHED EQUIPMENT AND CONTRACTOR FURNISHED EQUIPMENT TRAINING REQUIREMENTS. NA

M. RELATED NTSPs AND OTHER APPLICABLE DOCUMENTS. NTSPs and other documents that affect, are related to, or were used to develop this NTSP are listed below. Current NTSP documents can be downloaded online from the OPNAV Aviation Technical Training (N789H) Web site at: http://www.avtechtra.navy.mil/ntsp_catalog.htm.

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
AH-1W Aircraft	N88-NTSP-A-50-8520D/A	PMA276	Approved Feb 96
AN/AVS-6(V) Aviators Night Vision Imaging System (ANVIS)	NTP A-50-8214D/P	PMA202	Proposed Dec 95

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
AN/AVS-9(V) Night Vision Image Intensifier Set	Initial NTSP	PMA202	Initial Mar 00
C-2A Repro cured Aircraft	N88-NTSP-A-50-8308B/A	PMA231	Approved Oct 96
C-40A Aircraft	N88-NTSP-A-50-9901/P	PMA207	Proposed Nov 00
C-130 Logistic Support Aircraft	N88-NTSP-R-50 9011B/A	PMA200	Approved Apr 99
Cats-Eyes MXU-810/U Night Vision System	NTP A-50-9304/A	PMA202	Approved Nov 93
CH-53D and CH-53E Aircraft	NTP A-50-7604G/D	PMA261	Draft Jun 00
CH-53 Helicopter Night Vision System	NTP A-50-9305/A	PMA202	Approved Jan 94
CH-60 Fleet Combat Support Helicopter	Initial NTSP	PMA299	Initial May 98
CH-60S Multi-Mission Helicopter	N88-NTSP-A-50-9902/A	PMA299	Approved Aug 00
Combat Survivor Evader Locator (CSEL)	N78-NTSP-A-50-0018/I	PMA187	Initial Aug 00
E-2C Aircraft	N78-NTSP-A-50-8716E/D	PMA231	Draft Oct 00
E-6A/B TACAMO Aircraft	N78-NTSP-A-50-8516D/D	PMA271	Draft Mar 99
EA-6B Improved Capability Modification II and III	N88-NTSP-A-50-7904D/A	PMA234	Approved Mar 01
EP-3E Aries II Aircraft	N88-NTSP A-50-8605D/A	PMA290	Approved Mar 01

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
ES-3A Aircraft	A-50-8818C/P	PMA290	Proposed Feb 96
F-14A, F-14B, and F-14D Aircraft	N78-NTSP-A-50-8511C/D	PMA241	Draft Feb 01
F/A-18 Aircraft	N78-NTSP-A-50-7703H/D	PMA265	Proposed Aug 01
H-46 Helicopter	N78-NTSP-50-9409A/P	PMA226	Approved May 01
H-60 Armed Helicopter Program	N78-NTSP-A-50-9805/D	PMA299	Proposed Aug 01
HH-60H Combat SAR/SW Helicopter	A-50-8714B/A	PMA299	Approved Dec 93
HH/UH-1N Aircraft	A-50-9404/A	PMA276	Approved Oct 94
Joint Helmet Mounted Cueing System (JHMCS)	N78-A-50-0103/I	PMA202	Initial Aug 01
Joint Protective Aircrew Ensemble (JPACE)	JSTRAP Draft	PMA202	Draft May 01
Joint Service Aircrew Mask (JSAM)	JSTRAP Draft	PMA202	Draft May 01
MH-53E Helicopter	N88-NTSP-A-50-8417D/A	PMA261	Approved Feb 01
Navy Undergraduate Jet Flight Training System, T-45TS	A-50-8703B/D	PMA273	Draft Nov 94
Naval Aviation Chemical and Biological Defense Program	N78-NTSP-A-50-0016/I	NAVAIR (4.1.8)	Initial Aug 01
Naval Aviation Survival Training Program (NASTP)	N78-NTSP-A-50-9803/D	NOMI-6	Draft Dec 00

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
Naval Aviation Oxygen Systems (NAOS)	N78-NTSP-A-50-8603C/D	PMA202	Draft Aug 01
P-3C Update III Anti-Surface Warfare Improvement Program Aircraft	N88-NTSP-A-50-8112B/A	PMA290	Approved Jul 98
RH-53D Helicopter	A-50-8601C/D	PMA261	Draft Apr 95
S-3B Aircraft	N88-A-50-8310D/A	PMA290	Approved Feb 01
SH-2G Helicopter	A-50-9303/A	PMA299	Approved Jun 94
SH-60B LAMPS MKIII, Part B, Aircraft Subsystems	A-50-7702D/P	PMA299	Draft Aug 01
SH-60F Carrier Inner Zone ASW Helicopter	N88-NTSP-A-50-8508D/A	PMA299	Approved Aug 00
SH-60R Multi-Mission Helicopter Upgrade	Initial NTSP	PMA299	Initial Jan 00
SH/UH-3 Helicopter Transition	A-50-8901/D	PMA225	Draft May 94
SJU-17(V) Navy Aircrew Common Ejection Seat (NACES)	N88-NTSP-A-50-8517C/A	PMA202	Approved Jan 01
T/AV-8B Harrier II Weapon System	N78-NTSP-A-50-8210D/D	PMA257	Proposed Aug 01
USMC H-1 Upgrades Program	N78-NTSP-50-9602A/D	PMA276	Draft May 01
V-22 Osprey Joint Training Systems Plan	N88-JTSP-A-50-8412D/A	PMA275	Approved Aug 99

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
A/P22P-21 Crew Backpack Assembly	AC-ALSP-0101 REVA	PMA202	Approved Mar 01
Navy Combat Edge ILSP	AS-ILSP-425	PMA202	Approved Aug 94
Passenger Anti-Exposure Survival Suit ILSP	AS-ILSP-423	PMA202	Approved Aug 94
AN/PRC-112 Survival Beacon ILSP	3673-4007-03	PMA202	Approved Dec 87
JALEPV ILSP	NA	PMA202	Approved Jun 01
TTU-551/E Leakage Tester ULSS	NAWCADLKE-U70098031	PMA202	Approved Aug 99

PART II - BILLET AND PERSONNEL REQUIREMENTS

The items contained in Part I of this document are not currently covered under any follow-on training courses beyond "A" school. There are no NECs related to these components and no applicable data for this part of the NTSP. All NEC 7356 related equipment has been moved to Naval Aviation Oxygen Systems NTSP N78-NTSP-A-50-8603C/D.

PART III - TRAINING REQUIREMENTS

The items contained in Part I of this document are not currently covered under any follow-on training courses beyond "A" school. There are no NECs related to these components and no applicable data for this part of the NTSP. All NEC 7356 related equipment has been moved to Naval Aviation Oxygen Systems NTSP N78-NTSP-A-50-8603C/D.

PART IV - TRAINING LOGISTICS SUPPORT REQUIREMENTS

The following elements are not affected by ALSS and, therefore, are not included in Part IV of this NTSP:

IV.A Training Hardware

IV.A.2. Training Devices

IV.C. Facility Requirements

IV.C.1. Facility Requirements Summary (Space/Support) by Activity

IV.C.2. Facility Requirements Detailed by Activity and Course

IV.C.3. Facility Project Summary by Program

Note 1: Oxygen System requirements for C-602-2040 are not reflected in this NTSP. For these requirements, refer to the NAOS NTSP N78-NTSP-A-50-8603C/D.

PART IV - TRAINING LOGISTICS SUPPORT REQUIREMENTS

IV.A. TRAINING HARDWARE

IV.A.1. TTE / GPTE / SPTE / ST / GPETE / SPETE

CIN, COURSE TITLE: C-602-2029, Advanced Sewing Machine Repair

TRAINING ACTIVITY: NATTC

LOCATION, UIC: NAS Pensacola, Florida, 63093

ITEM NO.	EQUIPMENT / TYPE OR RANGE OF REPAIR PARTS	QTY REQD	DATE REQD	GFE CFE	STATUS
TTE					
005	Sewing Machine Table	11	Feb 97	GFE	Onboard
006	Sewing Machine Head, 111W151	11	Feb 97	GFE	Onboard
007	Sewing Machine Head, 111W155	11	Feb 97	GFE	Onboard
008	Sewing Machine Head, 211W151	11	Feb 97	GFE	Onboard
009	Sewing Machine Head, 31-15	11	Feb 97	GFE	Onboard
010	Sewing Machine Head, 206RB-1	11	Feb 97	GFE	Onboard
011	Sewing Machine Head, 7-33	11	Feb 97	GFE	Onboard
012	Sewing Machine Head, 199R	11	Feb 97	GFE	Onboard

IV.B.2. CURRICULA MATERIALS AND TRAINING AIDS

CIN, COURSE TITLE: C-602-2029, Advanced Sewing Machine Repair

TRAINING ACTIVITY: NATTC

LOCATION, UIC: NAS Pensacola, Florida, 63093

TYPES OF MATERIAL OR AID

Curriculum Outline

Instructor Guide

Student Guide

QTY	DATE	STATUS
REQD	REQD	
2	Feb 97	Onboard
2	Feb 97	Onboard
10	Feb 97	Onboard

IV.B.3. TECHNICAL MANUALS

CIN, COURSE TITLE: C-602-2029, Advanced Sewing Machine Repair

TRAINING ACTIVITY: NATTC

LOCATION, UIC: NAS Pensacola, Florida, 63093

TECHNICAL MANUAL NUMBER / TITLE	MEDIUM	QTY REQD	DATE REQD	STATUS
NA Cal's Handbook of Industrial Sewing Equipment	Hard copy	1	Feb 97	Onboard
TM-DGSC-3530-104 Parts List and Service Manual for Consew Model 99R Sewing Machine	Hard copy	1	Feb 97	Onboard
TM-DGSC-3530-109 Parts List and Service Manual for Consew Model 199R Sewing Machine	Hard copy	1	Feb 97	Onboard
TM-DGSC-3530-27 (1) Parts List and Service Manual for Consew Model 225 Sewing Machine	Hard copy	1	Feb 97	Onboard
TM-DGSC-3530-94 Operating Instructions, Parts List, and Maintenance Instructions for Consew Model 30 and Singer Model 31-15 Sewing Machines	Hard copy	1	Feb 97	Onboard

PART V - MPT MILESTONES

COG CODE	MPT MILESTONES	DATE	STATUS
PDA	Conducted Analysis of MPT requirements	Jun 89	Completed
DA	Distributed NTP	Aug 91	Completed
DA	Promulgated Draft NTP for Review	Apr 96	Completed
TSA	Proposed NTP Submitted to OPNAV	Apr 96	Completed
PDA	Navy Combat Edge Introduced to Fleet	Jun 96	Completed
TSA	Intermediate Maintenance Track RFT	Jul 96	Completed
DCNO	Approved and Promulgated NTP	Jun 97	Completed
CNO (MP&T)	Established MPT Advisory Board	Jan 99	Completed
TSA	Develop Draft NTSP (Update)	Dec 99	Completed
TSA	Conduct MTRR	Apr 00	Completed
TSA	Distribute Draft NTSP (Update) for Review	Jun 00	Completed
TSA	Develop Draft NTSP (Revised Update)	Aug 01	Completed
TSA	Distribute Draft NTSP for Review	Oct 01	Pending
TSA	Submit Proposed NTSP to OPNAV	Jan 02	Pending
DCNO (MPT)	Approve and Promulgate NTSP	Feb 02	Pending

PART VI - DECISION ITEMS / ACTION REQUIRED

**DECISION ITEM OR
ACTION REQUIRED**

COMMAND ACTION DUE DATE STATUS

No decision or action items are pending at this time.

PART VII - POINTS OF CONTACT

NAME / FUNCTION / ACTIVITY, CODE / INTERNET EMAIL	TELEPHONE NUMBERS
CAPT Owen Fletcher Deputy Aviation Maintenance Programs CNO, N781B fletcher.owen@hq.navy.mil	COMM: (703) 604-7747 DSN: 664-7747 FAX: (703) 604-6972
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